DOCUMENT RESUME

ED 028 552 EC 003 436

By-Dayan, Maurice
Validation of the Vocational Capacity Scale Utilizing Institutionalized Retardates. Final Report.
Pinecrest State School, Pineville, La. Training and Research Dept.
Spons Agency-Vocational Rehabilitation Administration (DHEW), Washington, D.C.
Pub Date Apr 68
Note-140p.
EDRS Price MF-$0.75 HC-$7.10
Descriptors-Day Care Services, Educable Mentally Handicapped, Employment Potential, *Exceptional Child Research, Factor Structure, Institutionalized (Persons), *Mentally Handicapped, Predictive Ability (Testing), Predictive Validity, Rating Scales, Sheltered Workshops, Success Factors, Test Interpretation, Test Reliability, *Tests, Test Validity, Trainable Mentally Handicapped, *Vocational Rehabilitation, Young Adults
Identifiers-VCS, Vocational Capacity Scale

A 3-year study was conducted to validate the eight-factor Vocational Capacity Scale (VCS), designed for use with the retarded. Subjects were 366 institutionalized mental retardates, both educable and trainable, aged 15 to 30, who were administered the VCS twice, 1 year apart. Social workers and staff worked individually to promote the highest level of vocational functioning for each subject. At the end of 2 years, the subjects were assigned to one of three criterion groups: day care, sheltered employed, and competitively employed. Members of the sheltered employed group were assigned to one of five job levels; a job analysis was completed. Data indicated that the VCS maintained its levels of reliability and predictive ability; that it did differentiate between job levels in a sheltered setting; that the classification of job levels in a sheltered setting could be improved through job analysis. It was also found that the VCS measured four factors: non-intellectual routine work, general ability or intelligence, general health, and maturity of stick-to-it-tiveness; and that the VCS normative data in the institutionalized setting was different from data in a community sheltered workshop setting. (LE)

ED028552

VALIDATION OF THE VOCATIONAL CAPACITY SCALE UTILIZING INSTITUTIONALIZED RETARDATES

RD-1619-P

APRIL - 1968

PROJECT DIRECTOR:

MAURICE DAYAN, ED. D.
TRAINING AND RESEARCH DEPT.
PINECREST STATE SCHOOL
P. O. BOX 191
PINEVILLE, LOUISIANA 71360

SUPERINTENDENT: COATES STUCKEY

[redacted]

EC003436E

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

VALIDATION OF THE VOCATIONAL CAPACITY SCALE UTILIZING INSTITUTIONALIZED RETARDATES

Final Report RD 1619-P

April 1968

Project Director:

Maurice Dayan, Ed. D
Training and Research Dept.
Pinecrest State School
P. O. Box 191
Pineville, Louisiana 71360

This investigation was supported, in part, by Research Grant No. RD 1619-P from the Vocational Rehabilitation Administration, Department of Health, Education and Welfare, Washington, D. C.

VOCATIONAL CAPACITY SCALE
STAFF

Research Staff

Maurice Dayan Ed. D	Project Director	1964 - 1968
William K. Faulk	Trainer Evaluator	1965 - 1967
Gary Milford	Psychologist	1965 - 1966
Charles Moreau	Institution Counselor	1965 - 1965
Aaron McAllister	Institution Counselor	1965 - 1967
David Poe	Institution Counselor	1967 - 1968
Betty Depew	Typist Clerk II	1965 - 1965
Linda Lindsey	Typist Clerk II	1965 - 1967
Mary Wall	Typist Clerk II	1967 - 1968
Daniel Juneau	Student	1965 - 1966
Larry Detraz	Student	1965 - 1965
Raymond Campbell	Student	1965 - 1967
Robert Connell	Student	1965 - 1967
Gail Ducote	Student	1966 - 1967

Institution Support Staff

Robert Cassel Ph. D	Psychologist	1965 - 1968
Katherine White	Dir. Social Service	1965 - 1968
Eddie Tarpley	Industrial Therapist	1965 - 1968
Leslie Collins	Pre-Vocational Teacher	1965 - 1968
Edna Blackburn	Food Service Manager	1965 - 1968
Elsie Netherlin	Laundry Superivisor	1965 - 1968

Consultants

Dr. Robert N. Vidulich
Dr. Edwin O. Timmons
Dr. R. L. Frye
Mr. Lee Tarver
Mr. Charles Williams
Dr. Calvin M. Pinkard, Jr.
Mr. Alden S. Gilmore
Dr. John W. Kidd

TABLE OF CONTENTS

Page

RESEARCH STAFF i

TABLE OF CONTENTS ii

SIGNIFICANT FINDINGS FOR THE REHABILITATION WORKER iv

LIST OF TABLES viii

Chapter

I. Introduction 1
   Background Information.
   Statement of Problem.
   Brief Description of Setting.

II. Review of Literature 6

III. Methodology 27
   Project Program and Professional Staff.
   Pinecrest Population and Research Samples.
   Independent Variables and Data Collection Procedures.

IV. Normative Data 47
   Pinecrest Sample.
   Comparison Pinecrest Sample with MacDonald Sample.

V. Analysis I 58
   Comparison of VCS of Three Criterion Groups.
   Description of Criterion Groups.
   Results of VCS Comparison with Criterion Groups.

CONTENTS CONT'D

Chapter Page

VI. Analysis II.. 68
Comparison within Levels of Sheltered Employed Group.
Description of Job Levels
Results of Comparisons.
Strengthing the Job Level Criterion.
Results of Comparison with Improved Criterion.

VII. Analysis III.. 89
What Does the VCS Measure

VIII. Development of Composite Meaningful Score........ 97

IX. Discussion and Implications of Results...........103

References...109

Appendix...116

SIGNIFICANT FINDINGS FOR THE REHABILITATION WORKER

1. Purpose and Methodology:

The Vocational Capacity Scale (VCS) is an eight measure instrument designed to predict various levels of vocational potential of the mentally retarded. The VCS was developed in a community sheltered workshop setting. This three year study was designed to validate the VCS as a measure of the vocational potential of mentally retarded young adults in a state residential institution. Three hundred and sixty-six mentally retarded, ages 15-30, served as the sample population. They were administered the VCS twice, one year apart. The staff of the institution worked individually to promote the highest level of vocational functioning for each subject. At the end of two years, the subjects were assigned one of three criterion groups; day care, sheltered employed, and competitively employed. To further test the strength of the measures, the sheltered employed group were assigned to one of five job levels. To strengthen the five job levels within the sheltered employed criterion, a job analysis was completed to eliminate tenure and "good ole boy" bias in actual job assignments.

Pinecrest normative data was computed and compared with the MacDonald normative data. Reliability coefficients were computed for each measure. The validity was measured by comparing the VCS measures with the criterion groups. Further concurrent validity was measured by comparing the VCS measures with the current job levels within the sheltered group. A factor analysis was computed to determine what the VCS measured.

2. Important Findings:

    1. The VCS maintained its high level of reliability.
    2. The VCS maintained its high level of predicative ability.
    3. The VCS does differentiate between job levels within a sheltered setting.
    4. The classification of job levels within a sheltered setting can be improved through job analysis.
    5. The VCS when administered to institutionalized retardates measure four factors, non-intellectual routine work, general ability, general health and social maturity.
    6. The VCS normative data in this institutional setting is different from a community sheltered workshop setting.

3. Implications for Work with Mentally Retarded:

Since the VCS maintained its reliability and validity in an institutional setting, it can be administered in either a community sheltered setting or a state residential institution. It can be utilized to predict which subjects might be successful in competitive employment and sheltered employment. It can be utilized to give suggestions for training as well as provide suggestions for level of job within a work setting.

4. Recommendations for use within the Rehabilitation Process.

It is recommended that the VCS be used both for prediction of training direction as well as for prediction of vocational potential. In the rehabilitation process, it can be used to predict not only whether an individual has vocational potential, but it can give suggestions as to level of employment. It can be utilized within an institutional setting to not only predict competitively employment but can provide suggestions for level of employment in the sheltered setting within the institution. The psychograph resulting from the VCS can give suggestions for areas of needed training. Utilizing the job rating scale developed, jobs within any work setting can be analyzed to aid the rehabilitation counselor to match a client's VCS performance to a specific job level or redesign a job to meet a clients' VCS performance level.

These findings suggest that within a sheltered workshop or a residential institution work setting, one can study all jobs available and organize them into levels of complexity and difficulty. With the levels identified, all retardates can be evaluated on the VCS measure, which will give some adequate suggestions for the level of work an individual could achieve.

The findings suggest that a Vocational Rehabilitation Counselor utilizing the results of the VCS might point out levels of work a client could perform within a private industrial setting. That is, it is feasible for a competitive employer to analyze the job requirements and change requirements of the job to fit a handicapped worker's work potential level.

LIST OF TABLES

Table Page

1. Age of Pinecrest Population (August, 1964)......... 29

2. Distribution of Primary Medical Etiological Classificantion of Pinecrest's VCS Population (N=1827) and Cross-Validation Sample (N=326)....... 30

3. Detailed Description of VCS Research Population and VCS Research Sample........................... 31

4. Pinecrest Research Sample (N=326), Age at Time of Admission and Length of Institutionalization.... 34

5. Assigned Job Levels of Pinecrest Research Groups as of July, 1965........................... 36

6. Pinecrest Research Sample (N=306) Demographic Data.. 37

7. Test-Retest Reliability for the Eight VCS Measures (N=305).................................. 48

8. Comparison of Total Pinecrest VCS Sample Normative Data with MacDonald Normative Data....... 49

9. Detailed Description of Each Criterion Group Sample by: Age, IQ, Sex and Race (N=322)........... 62

10. Comparison of Each VCS Measure with Three Criterion Group Mean Score........................ 65

11. Comparison of Each VCS Measure with Job Levels Within the Sheltered Employed Group (N=306)........ 73

12. Concurrent Validity Coefficients, Means and Standard Deviation of Ten VCS Measures and Two Job Level Criterion.......................... 86

13. Inter-Rater Reliability Coefficient, Mean Rating and Standard Deviation, for Job Level Criterion II.. 84

LIST OF TABLES CONT'D

Table Page

14. Intercorrelations of Eight VCS Measures Life Age, and IQ.................................. 90

15. Intercorrelation of Eight VCS Measures............. 92

16. Unrotated Factor Analysis.......................... 93

17. Rotated Factor Analysis............................ 94

CHAPTER I

INTRODUCTION

(A) Background Information:

The Vocational Capacity Scale (VCS) is an eight factor instrument developed in 1963 by the Research Division of the MacDonald Training Center Foundation in Tampa, Florida, based on research conducted over a six year period within a sheltered workshop setting. It was designed to predict various levels of vocational potential of the mentally retarded.

Of the eight VCS measures, four are rating scales. The first of these is the standardized Vineland Social Maturity Scale (Doll, 1947); the remaining three are rating scales designed to secure staff judgments on work habits, physical capacity, and general health (MacDonald, 1963). The remaining four VCS measures are tests of a more conventional nature: Direction Following (Wells Concrete Directions Test, Wells, 1927), Manual Skills (Pennsylvania Bi-Manual Worksample Assembly, Roberts, 1943), Arithmetic Achievement (Wide Range Achievement Test, Jastak, 1946), and Motivation (Disc Assembly Test, MacDonald, 1963).

The development of the VCS was based on data drawn from a sample of 138 mentally retarded young adults between

16 and 30 years of age, with WAIS IQ's ranging from 45-84. From this total sample, three criterion groups were formed: work activity, sheltered, and competitive employed.

The Employed Group was defined as those who had obtained and held competitive employment for a period of more than six months.

The Sheltered Group consisted of those who had not achieved competitive employment after a period of nine months in a sheltered workshop. However, they were functioning adequately in a sheltered work situation. In order to clearly delineate this group, sample members who had been successfully employed for longer than one month, but less than six months, were eliminated from consideration in the final statistical analysis.

The Work Activity Group consisted of those who, following evaluation and training over a nine month period, had not been able to maintain the standards required for sheltered employment and had been dropped from consideration of candidacy for apprenticeship in the sheltered workshop. This group generally required extensive supervision and were maintained in a portion of the Center designated as Work Activity, in which such supervision was available.

The MacDonald study reported that the eight measures were capable of discriminating between the criterion groups and capable of discriminating between the two higher criterion groups, the sheltered group and the employed group. As they approached the problem of integrating these measures so that their individual predictive ability could be translated into some meaningful and reportable form, several techniques were considered. The use of regression equations was rejected because of methodological difficulty and because of the desire to preserve the eight measures remaining for their potential use as a psychograph.

They elected to attempt to summate the scores in terms of quartile placement on each factor. To compensate for the varying discriminating power of the various measures, they (the measures) were arranged in ascending order of discriminative power according to the chi square significance level. Weights were then assigned to each factor based on equal divisiors of the baseline of the chi square distribution. The score on the VCS thus was derived by noting the subjects quartile placement on each factor, multiplying the quartile placement times the weight, and summing the scores thus derived into a total score.

In 1965, a three year research project, "Validation of the Vocational Capacity Scale," supported by a grant from the Vocational Rehabilitation Administration of the Department of Health, Education and Welfare, was initiated at Pinecrest State School, a state residential institution for the mentally retarded serving the state of Louisiana.

The basic goal of this research project was the cross-validation of the VCS as a measure of the vocational potential of mentally retarded young adults in a state residential institution. This setting is basically different in nature, population, and program than the community sheltered workshop used in the original study developing the VCS.

(B) Statement of the Problem:

With the recent development of an increasing variety of training programs to prepare the mentally retarded for the world of work, the problem of directions for training has arisen. Distinguishing which mentally retarded individuals can benefit from differing types or levels of training has also become important. Therefore, in order to develop more individualized training programs for the mentally retarded, there is an increasing need for an instrument to measure the vocational potential of the mentally retarded as well as to delineate individual areas of strengths and weaknesses.

The developers of the VCS, realizing that the scale in its present form was a research instrument rather than a finished and fully validated device, recommended validation in other settings. Early implementation of cross-validation studies in different settings, with increased numbers of subjects to provide reliability and cross-validation data was needed. The purpose of developing this scale was to improve prediction and to permit available funds to be spent in habilitating the largest number of retardates in the shortest period of time.

The present research project investigated the following questions; could the VCS standardized on mental retardates in a community day-care sheltered workshop and evaluation center, be used to identify different levels of employable individuals within a residential setting for mentally retarded? Could the VCS be used to identify retardates within an institution who had previously been evaluated as having no vocational potential? Could the VCS be used to predictively distinguish between employability levels within an institution?

CHAPTER II

REVIEW OF RELEVANT LITERATURE

A review of the literature indicates that there have been many approaches to the problem of measuring vocational potential. An intensive study and analysis of these approaches is a study in itself. The most comprehensive annotated bibliography to date was completed by Cobb at the University of South Dakota in 1966, and is entitled *The Predictive Assessment of the Adult Retarded for Social and Vocational Adjustment.*

A perusal of this annotated bibliography and the *Mental Retardation Abstracts* indicates that, although there have been many approaches to predicative assessment of potential vocational adjustment for adult retardates there is a lack of data on the development of a scale with the institutionalized retarded. There is a dire need for such an instrument since most of present research has been with educable and non-institutionalized retardates.

Most of the literature relating to vocational potential may be catergorized in one of the following areas:

1. Life-time process.
2. Pre-vocational work sample

3. Job availability.
4. Vocational adjustment.
5. Subjective process.
6. Non-vocational traits; e.g. intelligence, social competence, personality.
7. Job analysis.

Life Time Process:

Those that adhere to the life-time process method of measuring vocational potential (Adamson, 1961; Burr, 1956) present the thesis that the diagnostic process, like the biological growth process, must take place over the entire lifetime of the individual. This diagnostic process integrates the past (baseline evaluation), the emerging ideas of the present, and the political and philosophical convictions of our culture, into a farsighted commitment of human energy and ingenuity to new programs in the future.

The adherents to this concept therefore believe that vocational potential continually changes throughout life, and assessment of vocational potential is a continual process.

Prevocational Work Sample:

Probably the most popular technique for assessment of vocational potential of the mentally retarded is the prevocational work sample (Burdett, 1963; Dubrow, 1960; Kern, 1962; Rockower, 1953; Ladas, 1961). The work sample method introduces activities in a supervised or sheltered workshop setting that are considered to require the same skills, aptitudes, and abilities found in competitive industry. The retardate's performance on these activities given information about his individual capability to become a productive worker and provides an indication of his actual skills. Ladas, (1961) reports that his findings indicate that prediction on the basis of worksample learning cannot be made independently of individual personality factors. Patterson, (1964) states the general attitude has been that standardized tests are inadequate and that the work sample approach is a better method of assessing aptitude. He questions whether the brief work sample is useful since equipment tasks selected are not representative enough and they are not used for evaluating specific vocational factors. Tobias, (1960) feels that intelligence tests have been shown to be inadequate for assessment of mental retardates in terms of vocational potential, and has devised a battery of seven sub-tests representing typical workshop tasks to provide an appropriate measure. He has found his tasks to be correlated significantly with hourly earnings while IQ has a very low and insignificant correlation.

Job Availability:

There are several studies that suggest that the measurement of vocational potential must relate to job availability.

Clarke, (1959) and Raymond, (1927) contend that the retarded must be assessed in terms of the jobs available to retardates and not to jobs in general. Kolstoe (1961) stresses the need for an accurate description of jobs already available and successfully performed by the mentally retarded. Hartlage, (1965) has found that job availability for the mentally retarded is related to receptivity of employers to hire them. Employers do not differentiate between types of disability, and graduate employment counselors have been shown to be more receptive than personnel managers to placing retardates.

Vocational Adjustment:

One method of measuring vocational potential is through actual adjustment to a job during a trial period. O'Connor and Tizard (1951), report that the best predictors of work success are stability measures and manual dexterity.

Subjective Process:

Some writers (Huber and Soforenko, 1963; Shafter, 1954) suggest that job placment within institutions is generally made on the "feel" of it and not by objectives methods. They contend that "feel" or subjective attitudes about individuals are more important than specific job skills. Meadow and Greenspan (1961) also report that tests are not sufficient to predict employability, but that a counselor could make a more accurate appraisal after three months in the workshop.

Patterson (1964), suggests that ratings based on prolonged observation in a work setting appear to hold promise for evaluation of personal-social factors in work adjustment.

Non-Vocational Traits:

There are numerous studies that indicate that such traits as intelligence, personality and social competence are more important in prediction of vocational potential than vocational traits. Bower and Switzer (1962), have found 15 personality characteristics related to vocational success. Fry (1956), reported that Efficiency Quotients derived from the Wechsler performance IQ, to be the best predictor of work success. Jackson and Butler (1963), have found that the best predictors for success in community job placement are age, verbal IQ, place of residence, and submission or compliance to authority. Kolstoe (1961), has found that of 91 characteristics relating to background, intellect, personality, and social and vocational skills, an employed group was superior in physical characteristics, personality, and work. Merril (1952), reports that correlations between mental retardation and criterion measures were significant below a mental age of eight, but not above. He has found that the number of subjects doing complex tasks, the quality of work, and work efficiency increased with MA; efficiency improves at increasing rate to MA-8 but at a decreasing rate beyond MA-8. Shafter (1956), has found 12 characteristics to differentiate significantly between successful and unsuccessful vocational placement: behavior problems, escape, quarrelsomeness with employees, fighting with other patients, truthfulness, ambition, obedience, carelessness, punishment record, stealing and staff evaluation of work record during residence. Sloan (1948), has found that individual quantitative factors of the Rorschach are not predictive of vocational success, but that recoverability from color shock is significantly related to job success.

Job Analysis:

The job analysis technique (Mursel, 1953), is a device for relating the work potential and characteristics of institutional retarded to the characteristics and requirements of jobs in institutional settings. Kolstoe (1965, 1961), has stated there is a need for jobs for retarded classified by level of complexity, and for the development of a job analysis scale.

Predictive Test Batteries:

Investagators at Laradon Hall (1964) have devised a preliminary predictive battery which differentiate between potentially successful and unsuccessful retardates in regard to future employment. It has been found that the battery could have predicted 80% of the successes and failures in employment.

The Laradon Hall Occupational Success Predictive Battery is composed of 17 subtests, most of which were aptitude tests. Tests representing 33 of Guilfords factors were used with modifications. Fourteen tests developed by Laradon Hall using the work of Piaget as a theoretical guide were also used. Twenty-seven items from the "Miniature Situations Tests" were utilized. To complete the battery, various measures of physical function such as vision and dexterity were included. Parnicky and Kahn (1963), have used a prevocational battery of psychological tests and vocational measures as a set of multiple predictors. Analysis of their test data showed that prediction of success was possible from phase to phase within the training program but was of little value for subsequent employment. The prevocational battery included three varieties of tests; motor, personality-temperament, and intellectual. The motor tests included were Strombert Dexterity, Purdue Pegboard, Crawford Small Parts Dexterity, Heath Railwalking, Pennsylvania Bi-Manual Worksample, Bead Stringing and Bennett Hand Tool Dexterity.

The Personality and Temperamental measures were: Lipman Adaptation of the CMAS, the Locus of the Control Scale, and measures of Levels of Aspiration. The Peabody Picture Vocabulary Test was used to measure intellectual functioning.

Pinkard (1963) reports that the VCS could predict the employment status of mental retardates living in the community. Stephens (1964), has studied 78 predictor variables and found that the Vineland Social Maturity Scale and Peck's Sentence Completion Test to be the most efficient predictor instruments of this group. Wagner and Hawver (1965), have found eight psychological tests which are correlated significantly with the ranking of workshop success: O'Connor Finger Dexterity, Tweezer Dexterity, Minnesota Rate of Manipulation Placing, Turning, Hand Test, Goodenough-Horris Draw-a-man, Bender Visual-Motor, Gestalt and Binet IQ.

This brief review of the literature indicates that, although there are many approaches to the assessment of vocational potential for the mentally retarded, there seems to be no adequate predictive instrument or procedure for both training progress and subsequent employment.

This study investigated the VCS as to its adequacy as an instrument or procedure to predict level of vocational training or employment and subsequent employment. The VCS consists of eight measures. These measures are described in detail in Chapter III.

The Work Habits (WH), Physical Capacity (PC), and General Health (GH) are rating scales that require the raters to make judgements based on their perceptions of the changing vocational potentials of retardates as they relate to specific job requirements. These ratings may be improved as suggested by Patterson (1964) when they are based on prolonged observation in a work setting.

The Vineland Social Maturity Scale (SM) could be considered a measure of a non-vocational trait that has been found by Stephens (1964) as one of the best of 78 vocational predictors studied.

The Pennsylvania Bi-Manual Worksample (MS) is by the authors definition a worksample similar to the seven worksamples developed by Tobias (1960).

The Wide Range Arithmetic Test (AA) is a non-vocational measure that historically has had a high correlation with intelligence. Most research reports limited relationship between academics, intelligence, and vocational potential. Shafter (1957), found that arithmetic was the only academic area that might have some relation to vocational placement.

The Disc Assembly Test (DA) and the Direction Following Test (DF) are similar to the motor tests utilized by Parnicky (1963) in their development of the prevocational predictive battery.

The eight measures of the VCS or similar measures all have been found in the previously reported predictive measures of vocational potential.

Little is known about the relation of age, sex, race, length of institutionalization, age at time of admission to a residential institution, education, demography, birth order, and number of siblings to subsequent vocational success. We will briefly discuss these factors as they relate to the Pinecrest Sample and the relevant literature that reflects how the variables might affect our criterion measure in this research.

In the state of Louisiana 67.9% of the population is white and 32.1% is Negro or otherwise non-white. The percentage of Negro residents institutionalized at Pinecrest is slightly less than the state ratic, 76.6% to 22.4%. Some studies (Lemkau, Tietze, and Cooper, 1942; Malzbert, 1952), report higher rates of mental subnormality for Negroes than for whites. This reported higher prevalence of mental subnormality among Negroes has been attributed to lower socioeconomic levels and double-behavior standards resulting from social bias against Negroes (Sabagh, Dingman, Tarjan and Wright, 1959). It reflects the general findings that Negroes are more likely than whites to be apprehended for criminal activity and subsequently institutionalized when found to be mentally retarded. Rehabilitated Negro retardates are more easily accepted back into the general community because of the double behavior standards and the lower social economic levels, (Windle 1962,). It was therefore assumed that the Negro subjects in this research sample would have a greater opportunity for release and job success, although Dybwad (1941) refutes this. It was expected that the norms of our three criterion groups would reflect any relationship of race to subsequent vocational success.

SEX

Sex has generally appeared to be a prognostically unimportant variable. There have been 23 studies that have attempted to determine whether males or females have a better chance for vocational success after release from residential institutions for the mentally retarded.

Eleven of these studies revealed there was no significant relation (Krishef et. al., 1959; Little and Johnson, 1932; Popenoe, 1927; Shafter, 1957; Solomon, 1955; Storrs, 1929 Wallace, 1918), or presented data which revealed no significant relation, (Hegge, 1944; McPherson, 1935; Tarjan and Bennson, 1953; Whitney, 1948). Of the 12 remaining studies one (Wearne, 1942) revealed significant adjustment among borderlines. The rest were almost evenly divided between those which found females to have a better outcome, (Krishef, 1957; Tarjan, et, al., 1960; Wearne, 1942; Windle, 1959; Windle, 1962; Wolfson, 1956), and those which found males to have a better out come (Brown, et. al., 1959; Fernald, 1919; Potter and McCollister, 1926; Stanley and Gunzburg, 1956; Town, 1931).

There are different adjustment problems manifested by the sexes and for this reason they must be considered separately when prognostic indices are sought. This has been done in four studies (Krishef, 1957; Popenoe, 1927; Shafter, 1957; Wolfson, 1956). However there was little difference found. Shafter (1957) did find that the chances for a male's success for vocational placement go down the longer he is institutionalized, while the female's chances go up the longer she is in residence. This supports Stanley and Gunzburg's (1956), findings that being male is prognostically favorable among the young, but not among the old.

The prognostic differences found between males and females are due largely to different conditions of placement and different evaluative criteria, (Windle, 1962). For instance conditions of release between the two sexes differ. Males more frequently elope (Windle and Dingman, 1959), and are more frequently placed on competitive work placements, while females are usually placed in domestic rather than competitive work settings. Also evaluative criteria of outcome differ.

Females are expected to seek employment less often than males and males are not expected to be as sexually abstemious as females, Bijou, Ainsworth and Stockey, 1943).

The absolute difference between the success rates of the sexes on any given definition of outcome seems relative meaningless, (Windle, 1962). Males seem more likely to achieve economic self-sufficiency but they are more likely to suffer imprisonment. Thus, an objective of complete success may be best achieved by males, but an objective of at least partial success may best be achieved by females, (Windle, 1962).

Less than 30% of the MacDonald research sample was composed of females and the developers suggested that a predominately female population might require the development of different scoring. Since previous research did not clarify this issue the sample for the Pinecrest study was based on a fifty-fifty sex ratio and the female norms were compared with the male norms to see if differences existed. It was assumed that young males and older females of our sample would have the greatest opportunity for release and vocational success.

AGE AT TIME OF ADMISSION AND LENGTH OF INSTITUTIONALIZATION

In recent years admissions to institutions for the mentally retarded have tended to be young, below age 13. Residents admitted before their tenth birthday are usually severe subnormals, those between 10 and 25 are usually mild subnormals, and those admitted past their 25th birthday fall in between the other two groups, (Windle, 1962).

The sample group at Pinecrest was made up of residents that on an average were 13.8 years old at the time of their admission. Therefore, it can be assumed that this group was largely made up of mild retardates. This of course would be the group that would be most likely to succeed in job placements within the institution and in the community.

The length of institutionalization is also an index to the probability of the residents to adjust in both the institution and on outside placements, (Windle, 1962). It is also a measure of the degree to which the institution either has had an opportunity to train or rehabilitate the patient or has subjected him to debilitating processes of "mortification" (Goffman, 1957), "hospitalism", (Spitz, 1945), and "dependency" (Downing, 1958). The members of the sample group had been institutionalized on an average for a period of 7.8 years. It has been generally recognized that the longer the period of institutionalization, especially if commitment is when the child is relatively young, the more deleterious the effect on the individuals ability to adjust to community living. Since the majority of the members of this group were in their early teens at the time of their admission and they had been institutionalized on an average of 7.8 years, it was assumed that they would not be able to adjust to job placements without some specialized training in rehumanization. Our assumption is supported by Vail's thesis (1966) that states that de-humanization begins with the moment of institutionalization.

Attempts to counteract the effect of length of institutionalization were made by our Social Workers in the vocational rehabilitation process. Intensive efforts were made to limit the effect of length of institutionalization of the criterion groups.

FATHER'S OCCUPATION

In regard to their father's occupation, in 114 cases of the sample, (37.25%) it was unknown. Thirteen (4.25%) were professionals, technicans, and kindred laborers; three (.98%) were farmers or farm managers; eight (2.61%) were managers, officials or proprietors; three (.98%) were clerical and kindred workers; 33 (10.78%) were craftsmen and foremen; 21 (6.86%) were operation oil drillers; one (.33%) was employed in private household; 14 (4.58%) were farm laborers or farm foremen; and 48 (15.69%) were employed as laborers except those on farms and in mines. Previous studies had not been successful in revealing that a retardate's chances of vocational adjustment would be influenced by his fathers occupation. However, Shafter (1957), found that retardates' chances for success in vocational placement were greater if they came from economically dependent homes than if they come from economically comfortable and marginal homes. Windle (1962), felt that the spread was not large enough between comfortable, marginal and dependent categories to employ this index in a general prediction scheme.

For our research, this variable was controlled by our Social Workers considering foster home placement and half-way house placement in the rehabilitation process. The criterion groups would be affected to a minute degree by this variable.

EDUCATION

It has long been believed that academic training is of value in the social adjustment of retardates upon their discharge from residential facilities. However, evidence is lacking to adequately support this conclusion. This wide spread accepted belief needs additional investigation.

Academic achievement is the area in which subnormals are least capable of competing with normals. Up to now, treatment for mild subnormals has tended to provide for education that is geared to their levels. Davies (1959) considered the learning of academic skills as a criterion for the success of retardates in community and institutional adjustment. He regarded this as one of the factors which will improve this adjustment.

Other studies have not demonstrated the predictive validity of academic skills for discharged residents. Bijou (1944), reported that a high arithmetic grade on the Stanford Achievement Battery would predict the social adjustment of discharged residents that had been institutionalized for a period of four to eight years. However, he indicated that no predictive value existed for either the educational quotient or reading grade from this battery. Unfortunately there was no estimation of statistical significance or raw data to support Bijou's conclusions.

Krishef (1957) and Town (1931) reported that grade level of achievement was unrelated to adjustment after discharge and Shafter (1957) found literacy, telling time, years of schooling, public school attendance, and attendance at more than one school unrelated to the outcome of vocational placement.

Research has failed to reveal that the educational level of residents in institutions for the mentally retarded will predict vocational success. The only area in which it has been revealed that it might have some relation is the arithmetic portion of the Stanford Achievement Battery. One of the measures of the VCS is an arithmetic battery from the Wide Range Achievement Test.

BIRTH ORDER AND NUMBER OF SIBLINGS

In regard to the birth order, 48 (15.69%) of our research sample were the oldest; 182 (54.58%) were the middle child; 31 (10.31%) were the youngest and 45 (14.71%) were the only child. Greene (1945) claimed that "problem girls" in institutions, this would of course include those other than retardates, tended to be first or last born more often than did "well adjusted girls". Shafter, (1957) tested the applicability of this hypothesis to vocational placement by comparing the outcome of first born, middle rank and only child. However, he found no relation, (Windle, 1962).

The members of this sample group came from families that contained on an average 3.87 siblings. Shafter (1957) did find a statistically significant difference in outcome for the number of siblings, but since the relation was not linear he judged the findings of no predictive utility, (Windle, 1962). He found that a comparison of expected data with actual data failed to reveal any trend as the number of siblings increased. (American Journal of Mental Deficiency Index of Papers, Volume, 61, 1956-57, p. 609).

The variables of birth order and number of siblings was not expected to affect our criterion groups.

DEMOGRAPHY

Twenty-eight (9.15%) of those from the sample group came from farm communities with a population under 2500; 10 (3.27%) came from non-farm communities under 2500; 37 (12.09%) came from farm communities ranging from 2500-4999; 86 (28.1%) came from communities from 5000 to 24,999; 36 (11.76%) came from communities ranging from 25,000 to 99,999; 35 (11.4%) came from communities ranging from 100,000 to 499,999; 61 (19.93%) came from communities of 500,000 and over. Three previous studies (Shafter, 1957; Krishef, 1957; Krishef et.al., 1959) reported no relation between rural and urban location of pre-admission residence and the outcome of vocational placement of planned discharged.

We did not expect demography to affect our criterion groups.

BRIEF DESCRIPTION OF THE SETTING

This research project was conducted by the Training and Research Department at Pinecrest State School. The majority of the subjects were drawn from Pinecrest, a complex of 1000 acres with 153 buildings, housing 1827 residents, and having 995 employees. The various programs are administered with great flexibility, leading to the expansion and improvement of the functions of each department as experience, need, and available funds dictate.

Pinecrest is a multi-purpose institution which provides training for mentally retarded residents at all levels. Every resident's educational and training needs are evaluated by the Progress and Promotions Committee, composed of staff members. Residents thought to have employment potential are placed in an on-going training program. Every area within the institution is training oriented; for example, the kitchen is not only concerned with supplying required nourishment but also provides on-the-job training for residents. Pinecrest operates a laundry, dining halls, a dairy, and a farm. Residents thought to have employment potential are trained in one or more of these training areas. They are given experience in, for example, harvesting, sorting, folding and packaging in these various training environments. Some residents are assigned to housekeeping training, where they have the opportunity to learn to operate a buffer, mop, wax, clean windows, etc. Other residents are assigned to production training in vocational warehouse where they learn shoe repair, ceramic production, and construction. Others are assigned to automotive training where they learn to wash and wax autos, change oil and tires, and to provide simple automobile maintenance.

A small sample of subjects for the project was also drawn from Leesville State School, a state residential institution for the mentally retarded some 50 miles southwest of Pinecrest. Leesville is a small, (approximately 100 residents) special purpose institution, having a program to train educable mental retardates to return to the general community at age 21. Upon completion of approximately five years training at Leesville, residents are either discharged to work in the general community or they are transferred to a multi-purpose institution for the mentally retarded such as Pinecrest State School if found unable to function in the general community.

CHAPTER III

METHODOLOGY

Project Program and Professional Staff:

The basic staff to conduct the Vocational Capacity Scale research at Pinecrest State School, consisted of a part-time director, a trainer evaluator, an executive assistant, a research psychologist, a social worker, three college students serving as research assistants, and a typist clerk. The director holds a doctorate in Educational Psychology and has nine working years of experience with the mentally retarded. The executive assistant has had prior experience in job evaluation and placement with the Louisiana Employment Security Division. A MA psychologist had the major responsibility of statistical analysis and evaluation during the first year of the project. A social worker was concerned with developing necessary case histories and preparing a select number of residents for return to the community. Three part-time college students were employed to administer and score some of the VCS measures. Various professional personnel within the institution became involved in the research; staff physicians served as raters on the medical rating forms. The Nursing Service, Social Service Department, Vocational Rehabilitation, Occupational Therapy, Work Training Supervisors, Psychology Department, Laundry Supervisors, Dietary Department and Food Service Department were all involved in providing evaluations and direction to the subjects within this study.

Although a MA psychologist was recruited for the first phase, he was unable to continue with the project for its entirety. Therefore, Drs. R. N. Vidulich, E. O. Timmons and R. L. Frye were recruited from nearby major universities to serve as advisory consultants and to assist with computerized statistical analyses.

PINECREST POPULATION AND RESEARCH SAMPLE

At the onset of the project in August, 1964, the total resident population of Pinecrest was 1827 persons. The age, racial, sex and medical etiological characteristics of the total population are described in detail in Tables I and II.

From this total population, a Pinecrest VCS Research Population of 1271 subjects was selected. This was limited to those residents of "employable" age (15 years or older). Their intelligence, racial, sex and age characteristics are described in detail in Table III.

Also described in Table III, is the Pinecrest VCS Research Sample, comprised of 326 residents selected from the Pinecrest VCS Research Population.

TABLE I

AGE OF PINECREST POPULATION (AUGUST, 1964)

	White		Negro		
Age	Male	Female	Male	Female	Total
0-4	31	24	19	17	91
5-9	78	62	29	27	196
10-14	109	83	44	33	269
15-19	110	89	53	27	279
20-24	77	57	33	21	188
25-29	46	50	9	14	119
30-34	52	45	12	11	120
35-29	57	47	11	13	128
40-44	49	50	12	2	113
45-49	39	45	9	0	93
50-54	37	36	4	4	81
55-59	22	28	7	3	60
60-64	17	14	2	0	33
65-69	9	15	2	2	28
70-74	6	6	2	0	14
75-79	0	4	1	0	5
80-84	0	2	0	1	3
85-89	0	0	0	0	0
UNKNOWN	2	3	1	1	7
Sub-Total	741	660	250	176	1827
TOTAL	1401		426		1827

TABLE II

Distribution of Primary Medical Etiological Classifications of Pinecrest's V. C. S. Population (N=1827) and Cross-Validation Sample (N=326)

Classification	Total Population (N=1827)	Sample (N=326)
1. Mental Retardation associated with diseases and conditions due to infection.	11.8%	8.0%
2. Mental Retardation associated with diseases and conditions due to intoxication.	.5%	.6%
3. Mental Retardation associated with diseases and conditions due to Trauma and physical agent.	12.3%	8.7%
4. Mental Retardation associated with diseases and conditions due to disorder of metabolism, growth, or nutrition.	.5%	.6%
5. Mental Retardation associated with diseases and conditions due to new growths.	.2%	.0%
6. Mental Retardation associated with diseases and conditions due to (unknown) prenatal influence.	24.0%	25.4%
7. Mental Retardation associated with diseases and conditions due to unknown or uncertain cause with the structural reactions manifest.	31.0%	28.5%
8. Mental Retardation due to uncertain (or presumed psychologic) cause with the functional reaction alone manifest.	19.6%	28.2%
9. Not Retarded.	.07%	0.0%

TABLE III

Detailed Description of VCS Research Population and VCS Research Sample

	Research Population Pinecrest over 15 CA (N=1271)			VCS Research Sample (N=366)			
				Pinecrest (N=326)		Leesville (N=40)	
	Range	No.	%	No.	%	No.	%
IQ	0-25	515	40.5	26	8.0	0	0
	26-35	269	21.2	104	31.9	0	0
	36-50	293	23.1	135	41.4	2	5
	51-75	156	12.3	55	16.9	30	75
	75+	17	1.3	6	1.8	8	20
	Unknown	21	1.7	0	.0	0	0
RACE	White	1014	(79.8)	254	(77.8)	40	100
	Negro	257	(20.2)	72	(22.2)	0	0
SEX	Male	681	(53.6)	176	(54.0)	40	100
	Female	590	(46.4)	150	(46.0)	0	0
AGE	15-10	279	(21.9)	104	31.9	40	100
	20-24	188	(14.8)	119	36.5		
	25-29	119	(9.4)	103	31.5		
	30-34	120	(9.4)				
	35-39	128	(10.1)				
	40-44	113	(8.9)				
	45-49	93	(7.3)				
	50-54	81	(6.4)				
	55-59	60	(4.7)				
	60-64	33	(2.6)				
	65-69	28	(2.2)				
	70-74	14	(1.1)				
	75-79	5	(.3)				
	80-84	3	(.2)				
	Unknown	7	(.5)				

Since one purpose of this research was to replicate the MacDonald study with institutionalized retardates, an attempt was made to construct the Pinecrest Sample to resemble as closely as possible the original MacDonald Sample.

The MacDonald Sample consisted of 172 retardates with WAIS IQs of 45-84 and were between 16 and 30 years of age. Seventy percent were male and 30% were female. Most of the subjects had multiple handicaps, i.e., mental retardation with other abnormalities, (emotional disturbance, hearing, speech or vision disorders, cerebral palsy, epilepsy, mongolism, polio residual, spinal deformities, behavioral or gait abnormalities etc.). The severely handicapped, such as the legally blind, or the uncontrolled epileptics, were eliminated from the original sample.

Five hundred and eighty-six subjects were drawn from the Pinecrest VCS research population that were 15-30 years of age. From this group, all with severe handicaps (e.g. non-ambulatory, blind) were eliminated. Those over 30 years of age were eliminated from the research sample to minimize the effect of institutionalization. Also eliminated from the research sample were those with measured IQs of 25 or less, except for those (N=26) who had already been assigned jobs within the institution prior to the onset of the research project. Since the MacDonald researchers found that a measure of intellectual capacity did not differentiate between their criterion groups, it seemed advantageous to include a markedly lower IQ range, excluding only those profoundly retarded (below IQ 25) that had not demonstrated work potential through previous institutional job assignment.

In selecting the sample from the research population, there were no changes in the race or sex ratios. A disproportionate number of subjects were chosen from groups whose IQs ranged from 26-35 and from 36-50, since IQs at or below IQ 25 were largely excluded.

Table IV shows the mean life age, for the Pinecrest Research Sample, to be 21.5 years. These residents ranged in age at time of admission from 1.2 years to 29.1 years, with an average admission age of 13.8 years. The Pinecrest subjects had been in the institution from 0.1 year to 22.5 years, with a mean of 7.8 years of institutionalization.

Table II describes the 326 subjects in the Pinecrest Research Sample by etiology. The Pinecrest Research Sample is not markedly different from the Pinecrest Research Population in terms of etiology of mental retardation.

At the onset of this research, 222 subjects of the Research Sample were working at Pinecrest. They had been

TABLE IV

PINECREST RESEARCH SAMPLE
N=326

Age at Time of Admission and Length of Institutionalization

	Age	Age at Admission	Length of Inst.
Range	15.0-30.6	1.2-29.1	0.1-22.5
Q_1	18.1	10.5	3.8
Q_2	21.5	13.5	7.5
Q_3	25.1	16.6	10.9
Mean	21.5	13.8	7.8

assigned previously to one of the five job levels which will be described in detail in chapter VI.

Eighty-four were neither working nor attending school, and 20 were not working but had been assigned full-time to the institution's school program. Table V shows the number assigned to each job level as of July, 1965. Since the subjects in the MacDonald Sample had IQs ranging between 45-84, it was decided to draw an additional sample of educable young retardates with higher IQ levels. Since the educable young adults from Pinecrest had already been selected a sample of 40 residents from Leesville State School was used. Those 40 subjects constituted all of the Leesville population 15 years of age and older. Table III indicates that 30 of the 40 Leesville subjects has IQs ranging between 51-75, and 8 had IQs above 75, who were still considered as retardates. The Leesville Sample was made up of white males with limited age ranges; 19 were 15 years of age, 9 were 16 years of age, 10 were 17 years of age, and 2 were 18 years of age.

Although the original 1964 VCS Research Sample totaled 366 subjects, 326 from Pinecrest and 40 from Leesville, the actual number of subjects from whom data was available varied from one analysis to another, as will be indicated in the

TABLE V

Assigned Job Levels of Pinecrest Research Groups as of July, 1965

Job Level	No.
I	102
II	85
III	21
IV	12
V	2
Not Working	84
Not Working, in School	20
	326

TABLE VI

Pinecrest Research Sample (N=306)
Demographic Data

Size of Community Residence Prior to Institutionalization:	No.	Percent
Under 2500 Farm	28	9.15
Under 2500 Non-Farm	10	3.27
2500-4999	37	12.09
5000-24,999	86	28.10
25,000-99,999	36	11.76
100,000-499,999	35	11.44
500,000-Over	61	19.93
Unknown	13	4.25
	306	100.00
Fathers Occupation:		
Unknown	114	37.25
Prof., Technical & Kindred Workers	13	4.25
Farm and Farm Managers	3	.98
Managers, Officials, Proprietors	8	2.61
Clerical & Kindred Workers	3	.98
Sales Workers	12	3.92
Craftsmen & Foremen	33	10.78
Operation, Oil Drillers	21	6.86
Private Household	1	.33
Service Workers	14	4.58
Farm Laborers & Foremen	27	8.82
Laborers except Farm	48	15.69
Other	9	2.94
	306	100.00
Subjects Education:		
Unknown	115	37.58
None	75	24.51
1 - 2	58	18.95
3 - 4	24	7.84
5 - 6	17	5.56
7 - 8	4	1.31
9 - 10	1	.33
Ungraded	12	3.92
	306	100.00

appropriate later sections of this report.

At the onset of the testing in 1964, data could not be collected from 31 Pinecrest residents included in the Research Sample because of their inability to comprehend instructions or because of physical disabilities which prevented them from taking either the Manual Skills and/or Disc Assembly Test.

Data collection continued over a 2½ year period, and residents attrition (18 Pinecrest, 13 Leesville) caused further reduction of the actual sample by the end of the project.

The size and composition of the sample used in each data analysis will be presented at the appropriate points in this report.

INDEPENDENT VARIABLES AND DATA COLLECTION PROCEDURES

The independent variables in this research project were the eight measures of the Vocational Capacity Scale (VCS) that were developed by the MacDonald Training Center. The rating forms or tests for these measures, as well as specific procedural instructions and scoring sheets, are provided in the Appendix.

The developers of the VCS have stated that it would be preferable that these test be administered by a psychologist, but that none of them is so difficult, restricted or critical that they could not be administered by any professional person with minimal basic training in test administration, scoring, and interpretation.

For the Pinecrest Research, the project staff trained three college students to administer four of the tests and these examiners experienced no difficulties in administering these test. The Social Maturity measure was administered by the executive assistant of the project staff.

The clerical staff scheduled the residents to report for testing. The testing was conducted in two rooms that were furnished with a semi-circular table, two chairs and a desk.

The rooms were on the second floor of the Training and Research building and were acceptably quiet. Approximately ten subjects per week were tested.

The rating scales were sent to the raters following a brief orientation on rating procedures. Some problems of establishing rapport occured. Some of the residents refused to be tested and cooperated only after the research director or someone familiar with them participated in the testing sessions. Some residents did not like missing their work to take the "silly" tests.

A. Work Habits (WH)

This is a rating scale developed and standardized at the MacDonald Training Center Sheltered Workshop (MacDonald, 1963). It requires the rater to evaluate the trainee in four general areas: (1) learning and comprehension, (2) performance, (3) attitude toward work and (4) interpersonal relations.

The work habits ratings were completed independently by three staff members, usually the cottage parents from the residents cottage on the 6-2 and 2-10 shifts, and the resident's supervisor. If the resident did not work, a third person who was familiar with his activities, such as a teacher or recreation worker was used. The raters were asked to observe the resident in work settings prior to rating him. An average rating score, derived from these three ratings was used.

B. Physical Capacity (PC)

This rating scale is an adaptation of the scale taken from Estimates of Worker Trait Requirements for 4,000 Jobs (U. S. Department of Labor, 1958), modified and standardized at the MacDonald Training Center. This instrument requires the raters to judge four descriptive catergories on a four-level scale. These catergories are: (1) lifting, carrying, pushing, and pulling, (2) climbing and balancing, (3) stooping, kneeling, crouching, and crawling, (4) reaching, handling, fingering and feeling.

The physical capacity ratings were independently completed by three staff members, a cottage parent, the work supervisor or teacher, and a staff physician. The raters had at least two weeks to observe the resident being rated, and had access to the resident's medical examination reports and other pertinent data. An average rating score, derived from these three ratings was used.

C. The Vineland Social Maturity Scale (SM)

This scale was first published in 1935, and since has been revised, (Doll, 1947). It is often considered the best single measure available for measurement of adaptive behavior.

The scale provides an outline of detailed performances of which children show a progressive capacity for caring for themselves, and for participating in activities that lead to independent living. The items of the scale are arranged in order of increasing difficulty and represent progressive maturation in self-help, self-direction, locomotion, occupation, communication and social relations.

The Vineland Social Maturity Scale was administered in accordance with the manual of directions (Doll, 1947).

The scale was administered by the trainer evaluator in all cases, and the cottage charge attendant served as the informant. Prior to administration of the Vineland, the trainer evaluator was thoroughly trained in the technique by the institution's chief psychologist who has had wide experience with this instrument.

D. General Health (GH)

This rating form was developed and standardized at the MacDonald Training Center (MacDonald, 1963) and is a simple four-point rating scale of general health.

The ratings for this factor were based on a routine physical examination administered prior to or during the evaluation period. These ratings were independently completed by a cottage parent, a work supervisor or teacher, and a staff physician. An average rating, derived from these three ratings was used.

E. Manual Skills (MS)

This measure was derived from the assembly phase of the Pennsylvania Bi-Manual Worksample (Philadelphia Educational Test Bureau, 1943). It measures an individual's capacity to integrate a number of unique traits into a well organized and smooth working pattern of performance. It combines finger dexterity of both hands, gross movements of both arms, eye-hand coordination, bi-manual coordination, and ability to use both hands in cooperation. The task is sufficiently long to allow qualitative observations on aspects of the performance other than motivation, speed, and dexterity.

For the retardates test it was sometimes necessary to determine handedness by providing a series of tasks rather than by asking the resident. Some of the residents had confused handedness and therefore had difficulty in the assembly procedures. Some seemed to have difficulty with the rhythmic coordination required. During the practice session, the testers were encouraged to observe closely which procedure, left-handed or right-handed was most comfortable for the subject. Many of the subjects required longer and more detailed practice sessions. In some cases, the motion sequence was developed through habit rather than verbal instruction. Since at least 50% of the subjects did not fully understand the concept of left or right, it was necessary to train through repeated practice rather than verbal instructions. Scoring was based upon the time in seconds to complete the assembly phase.

F. Arithmetic Achievement (AA)

This factor is derived from the Arithmetic Achievement Test of the Wide Range Achievement Test (Jastak, 1946). The arithmetic test correlates .91 with the New Stanford Arithmetic Computation Test, and was standardized on 4,052 students.

A test-retest reliability of .90 has been reported by the author of this measure.

Since the majority of the clients were below 2nd grade educational level, the oral test was always administered. If both oral and written sections were administered, the two scores were averaged to obtain an arithmetic rating.

G. Motivation (DA)

This measure uses the Disc Assembly Test, an unpublished task assessing motivation and sustained interest, developed at the MacDonald Training Center (Mac Donald, 1963). It involves a routine task that requires the subject to assemble bolts, nuts, and washers to a five hole disc. The total score is the number of discs completed in one hour. Three of the five holes must be completed to include the disc in the final score.

There was no difficulty in administering this test. Since the test was reported to be a test of motivation, we tested the fatigue factor by keeping a count of the number completed in each 15 minutes of the testing hour. For the sample of 85 cases used in this analysis, there were no differences found between the number completed during the first and last 15 minutes of the testing session.

H. Direction Following (DF)

The Wells Concrete Direction Test (Wells, 1927) was used originally for selection and classification of Army Personnel, but it has not been widely circulated and is not currently published. It requires the subject to follow directions ranging from simple to complex.

The major problem in administering this test was the requirement that the subjects recognize and know the name of 12 common tools and understand the four concepts of left, right, far, and near. Before the test could be administered, subjects had to be taught the names of the tools by auditory recognition, and to understand the directional concepts. Thirty-three subjects could not be administered this test because they could not be taught the concept of left-right or far and near.

Inter-rater reliability figures for the three rating scales developed at the MacDonald Training Center were obtained (MacDonald, 1963) using the judgments of five or more raters. Reported reliabilities (MacDonald, 1963) were: Work Habits, 57; Physical Capacities, .70; and General Health, .79, utilizing the Kendall coefficient of concordance.

Although the MacDonald researchers report that the direction following reliability indices remain consistently high (MacDonald, 1963, p. 114) they do not report the reliabilities or the statistical techniques used for their computation for this reliability index or for those of the other VCS tests.

CHAPTER IV

NORMATIVE DATA FOR 8 VCS MEASURES FOR PINECREST'S SAMPLE

The test-retest reliability for each of the eight measures was calculated using the greatest N available for each measure. (See Table VII).

During the first testing, complete evaluations were secured on 346 of the 366 total VCS Research Sample. On the second testing, because of discharges etc., only 305 complete evaluations were secured.

The test-retest reliability for each measure was very high, ranging from a r=.779 for physical capacity to a r=.996 for the Vineland Social Maturity Scale.

COMPARISON WITH MACDONALD SAMPLE

The normative data of the Pinecrest VCS Sample was compared with that of the MacDonald Sample where possible. Unfortunately all data was not reported and available for the MacDonald Sample. (See Table VIII).

Work Habits (WH):

The higher the score on this test the poorer the work habits. The mean data on WH for the MacDonald study was not reported or available. The Pinecrest Research Sample had a

TABLE VII

TEST-RETEST RELIABILITY FOR THE 8 VOCATIONAL CAPACITY SCALE MEASURES (N=305)*

MEASURE	N 305	MEAN	S.D.	RANGE	T-RT RELIABILITY
WH	305	26.96	10.36	13.5-47.0	.830
	305	26.07	9.76	14.0-51.5	
PC	305	12.63	3.50	4.0-16.0	.779
	305	12.19	4.11	6.6-16.0	
SM	305	65.37	20.50	41.0-93.5	.996
	305	66.58	20.89	41.0-95.0	
GH	305	2.99	1.11	1.5-4.0	.834
	305	3.00	1.04	1.0-4.0	
MS	305	836.7	556.7	370-3198	.887
	305	811.5	545.8	247-2707	
AA	305	1.52	1.24	0-5.3	.942
	305	1.61	1.32	0-5.0	
DA	305	25.26	15.18	0-71	.864
	305	27.71	15.36	0-69	
DF	305	15.34	17.82	0-60	.855
	305	13.44	16.50	0-63	

*Data from two testings are reported. The first testing was begun in February, 1965, the second, one year later for each subject. In this table, the first test is reported first in all cases.

TABLE VIII

COMPARISON OF TOTAL PINECREST "VCS SAMPLE" NORMATIVE DATA WITH MACDONALD NORMATIVE DATA

Work Habits	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Pinecrest	326	29.84	8.94	52.0-13.5	35.0	29.2	23.6
Male	176	30.15	8.64	52.0-13.5	35.6	29.9	23.6
Female	150	24.98	9.30	52.0-14.7	24.0	27.7	23.3
Leesville	40	27.93	7.87	44.3-15.0	33.7	27.3	21.3
TOTAL	366	29.63	8.75	13.5-13.5	35.0	28.7	23.3
MacDonald	136	*	*	*	43.0	33.0	23.0
Physical Capacity							
Pinecrest	326	12.92	2.92	4.0-16.0	11.5	13.5	15.5
Male	176	13.12	2.90	4.0-16.0	11.8	14.0	15.5
Female	150	12.69	2.93	4.0-16.0	11.0	13.3	15.5
Leesville	40	14.78	1.57	11.5-16.0	13.5	15.5	16.0
TOTAL	366	13.12	2.80	4.0-16.0	12.0	14.0	16.0
MacDonald	*	*	*	*	6.0	9.0	13.0
Social Maturity							
Pinecrest	326	69.56	9.85	34.0-93.5	63.5	68.5	76.0
Male	176	67.95	9.76	34.0-93.5	61.5	67.5	73.5
Female	150	71.46	9.58	40.0-93.5	66.0	71.0	78.5
Leesville	40	79.65	5.70	70.5-91.0	74.5	79.5	83.0
TOTAL	366	70.77	10.02	34.0-93.5	62.5	68.5	75.0
MacDonald	136	71.56	30.89	28.0-109.0	59.0	72.0	82.0

*Data not available.

TABLE VIII (Cont'd)

General Health	N	MEAN	SD	RANGE	Q1	Q2	Q3
Pinecrest	326	3.15	.78	1.0-4.0	2.5	3.3	4.0
Male	176	3.20	.80	1.0-4.0	2.5	3.3	4.0
Female	150	3.10	.76	1.0-4.0	2.5	3.0	3.7
Leesville	40	3.80	.55	2.0-4.0	4.0	4.0	4.0
TOTAL	366	3.20	.84	1.0-4.0	2.5	3.3	4.0
MacDonald	*	*	*	*	*	*	*
Manual Skills							
Pinecrest	310	956"	529"	3198"-297"	1310"	785"	590"
Male	169	988"	554"	3198"-323"	1307"	824"	548"
Female	141	917"	556"	3196"-297"	1098"	831"	514"
Leesville	40	509"	217"	1298"-297"	561"	471"	365"
TOTAL	350	917"	641"	3198"-297"	1266"	796"	497"
MacDonald	136	623"	282"	2572"-316"	734"	590"	480"
Arithmetic							
Pinecrest	325	1.55	1.27	0-5.3	0.6	1.2	2.3
Male	176	1.39	1.18	0-5.3	0.4	1.2	2.0
Female	149	1.72	1.26	0-5.2	0.7	1.4	2.3
Leesville	40	3.33	1.09	1.4-5.0	2.3	3.3	4.2
TOTAL	365	1.73	1.37	0-5.3	0.6	1.5	1.8
MacDonald	136	3.44	1.41	0-7.5	1.6	2.9	4.4

*Data not available.

TABLE VIII (Cont'd)

Disc Assembly	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Pinecrest	311	26.30	14.47	0-71	16	25	35
Male	169	25.60	13.95	0-71	16	24	34
Female	142	27.20	14.85	0-62	17	25	36
Leesville	40	39.47	13.96	7-58	29	40	49
TOTAL	351	27.88	14.86	0-71	19	29	45
MacDonald	136	33.32	13.45	7-74	20	31	41
Direction Following							
Pinecrest	324	11.05	14.88	0-60	0	3	20
Male	177	10.92	15.38	0-50	0	0	21
Female	147	11.21	14.28	0-60	0	6	20
Leesville	40	31.72	27.12	0-57	22	32	43
TOTAL	364	13.33	15.14	0-60	0	18	46
MacDonald	136	28.12	15.3	0-60	14	28	39

mean score of 29.84. The median score for Pinecrest was 28.7 as compared to 33 for MacDonald. The Q_3 was the same for both, while the Q_1 was eight points higher (poorer) for the MacDonald Sample. This difference should be investigated further because the Pinecrest Sample had chosen a greater number of low IQs. This might be explained by the difference in attitude between a community setting and an institution setting in their beliefs about work potential for the mentally retarded. The institution must keep them, the community can say they do not adjust and recommend other programs.

In comparing the males and females of the Pinecrest Research Sample the mean for female was five points lower than that for males but the quartiles were not markedly different.

Physical Capacity (PC):

A higher score on this test indicates a better Physical Capacity for work. The Pinecrest mean for PC was 13.12, while the MacDonald mean was not reported. The median score for Pinecrest was 14.0 as compared to 9.0 for MacDonald. There was only a four point spread between Q_1 and Q_3 for the Pinecrest Sample as compared to a seven point spread for the MacDonald. The Q_1 for MacDonald was six points lower than the Q_1 for Pinecrest and the Q_3 for Pinecrest was 16.0 as compared to 13.0 for MacDonald.

The quartile scores were consistently lower (poorer) for the MacDonald Sample. Again one would have expected the opposite finding, hypothesizing that those with lower physical capacity for work would be institutionalized more often. Again this is probably due to the difference in attitudes of the raters rather than the "true" physical capacity ratings. Institutional raters may be more accepting of limitations of mental retardates and therefore not perceive limitations in their physical capacity for work.

There was no substantial difference between the Pinecrest males and females for the mean and quartile ratings of physical capacity.

Social Maturity (SM):

The mean of the Pinecrest Sample was not substantially different from the MacDonald Sample mean (70.66 to 71.56) for the Vineland Social Maturity Scale. The spread between Q_1 and Q_3 for the MacDonald Sample was greater than the Pinecrest Sample. MacDonald reported a standard deviation (S.D.) of 30.89 for their sample while Pinecrest Sample had a S.D. of only 10.02. Doll reported a S.D. of 6.00 - 12.00 for a sample of 620 cases who were normal between ages 16 to 30. Pinecrest females tended to score higher on the Vineland than the Pinecrest males.

General Health (GH):

Data was not available on the rating on general health for the MacDonald Sample. For the Pinecrest Sample the mean rating was 3.15 and there was no substantial difference between the males and females.

Manual Skills (MS):

Low scores on the MS measures are related to good vocational potential according to the MacDonald report. The MacDonald mean of 623" was significantly lower than the Pinecrest mean of 917". There was little difference between the two samples at the Q_3 level, but the median score for MacDonald 590" was lower when compared with the Pinecrest median score of 796". The Q_1 for Pinecrest was 1266" as compared to 734" for MacDonald.

For the Pinecrest Research Sample there was little difference between male and female mean and quartile scores.

Arithmetic (AA):

High scores indicate better potential for vocational success. The MacDonald mean AA score was 3.44 as compared to 1.73 for the Pinecrest Research Sample. The Q_3 for Pinecrest was 1.8 as compared to 4.4 for MacDonald. The median AA score for Pinecrest was 1.5 as compared to 2.9 for the Mac Donald. Since the MacDonald group did have a higher mean IQ it was hypothesized that the MacDonald group would have a substantially higher mean AA score.

There was substantially no difference between male and female scores on AA for the Pinecrest Sample.

Disc Assembly (DA):

High scores on DA should indicate better vocational potential. The MacDonald Sample mean of 33.82 for this measure was higher than the Pinecrest mean of 27.88. The median score of DA for the MacDonald Sample was 31 as compared to the Pinecrest median DA score of 29. The Q_3 DA score for the Pinecrest Sample was 45 and higher than the Q_3 DA score for the MacDonald Research Sample. There was substantially no difference between male and female mean, median and quartile scores for the Pinecrest Sample.

Direction Following (DF):

High scores on DF were related to vocational potential in the MacDonald findings. The mean score of 28.12 for the MacDonald Sample on this measure was substantially higher than the Pinecrest DF mean score of 13.33. The Q_1 DF score for MacDonald was 14 as compared to 0 for the Pinecrest Research Sample. The median DF score for MacDonald was 28 as compared to 18 for the Pinecrest Sample. The Q_1 and median DF scores for MacDonald Sample was higher than the Pinecrest

Q_1 and median DF score. The Q_3 DF score for Pinecrest was 46 and higher than the Q_3 DF score of 39 for the MacDonald Sample.

Summary:

In comparing the Pinecrest normative data with that of the MacDonald total sample, it was found that the mean scores on the rating scales were relatively similar, but substantially different on the performance measures. Although both samples were drawn from a mentally retarded population, this normative data comparison suggests that the two samples were different generally on the measure used. In comparing the MacDonald sample with the small sub-sample from Leesville State School we find no substantially difference. Since the Leesville sub-sample was very similar in age and IQ to the MacDonald Sample this similarity was hypothesized. The reasons for the difference between the Pinecrest Sample and the MacDonald Sample on these measures could be attributed to the IQ difference, age differences and possibly due to the difference in attitudes of the raters toward retardates in different settings.

These findings suggest that a special purpose school like Leesville or educable youngsters can be considered and studied using MacDonald norms. The findings further suggest that when you increase the range of intelligence levels of mentally retarded local norms should be developed. There seemed to be no difference between male and female normative data for the Pinecrest Sample. This finding refutes the need for developing separate sex norms for the VCS scale.

CHAPTER V

RESULTS

ANALYSIS I: COMPARISON ON VCS OF THREE CRITERION GROUPS

For the purpose of this research, three criterion groups were designated; the Day Care, the Competitively Employed, and the Sheltered Employed Groups. The Day Care Non-Employed group consisted of those who were unable to work even in a sheltered setting. The Competitively Employed group consisted of those who had been able to hold competitive jobs for six months or more in the community, or who had worked for at least one year in a competitive salaried position within the institution. The Sheltered Employed group consisted of all those not included in the day care non-employed or the competitively employed groups having, as a common characteristic, employment within a sheltered setting.

During the first two years of this research, a social worker collected data on the movement of all subjects within and outside the institution. Six months from the termination of the research project, after careful analysis of this movement, subjects were assigned to one of the three criterion groups, or they were dropped from the research sample. A description of the subjects in these three criterion groups, and of those subjects eliminated, follows:

COMPETITIVELY EMPLOYED:

Twenty subjects were assigned to this criterion group. Ten were Pinecrest residents and three were Leesville residents who had been discharged or furloughed from these institutions and had been competitively employed for at least six months. Seven of the twenty subjects were Pinecrest residents within the institution who were independently maintaining their employment, and who were considered state employees by the institution's administration and state civil service. They received regular payroll checks, and had complete freedom to leave the institution and go to town without prior approval. Pinecrest residents assigned to this work level were chosen by the superintendent in conjunction with the work training supervisor and upon the suggestion of the Progress and Promotions Committee Staff. VCS performance was not considered in the work assignment of these seven residents. Three project staff members and one consultant read all 20 case histories independently and unanimously agreed that these individuals were competitively employed.

SHELTERED GROUPS:

Two hundred and thirty-nine subjects were assigned to this criterion group. Eighteen were not employed within the institution at the time of the first testing, but were subsequently employed and were still working at the time of the criterion assignment. Twelve were subjects who had been discharged from Leesville and were working, but their work was independently rated by four judges to be sheltered, e.g. working with parents, sheltered workshop or similar sheltered settings of these Leesville subjects. Two had been transferred to Pinecrest and one to a state mental hospital. Twelve of the 239 were former residents who had been discharged from Pinecrest and who were working outside the institution at jobs judged to be sheltered. Nine were subjects who had been discharged from Pinecrest but were not working outside, although they had worked successfully within the institution prior to discharge. One hundred eighty-eight were working within the institution at the time of the first testing and continued to work during the entire research period.

DAY CARE NON-EMPLOYED:

Sixty-three subjects were assigned to the day care non-employed group. Four subjects had been discharged from Pinecrest and had never worked while in residence and were not employed on the outside. Attempts had been made to place them in work situations while in residence and that their parents had also attempted to find them employment upon discharge. Fifty-nine were Pinecrest residents who had never been employed, and were considered by the staff to be unemployable, or who had been tried in institution jobs and found unsuitable.

INDIVIDUALS ELIMINATED:

Forty-four individuals could not be assigned to one of the three criterion groups. Nineteen of these were Pinecrest residents assigned to full-time educational class-room school programs who had never worked or been tried in work settings. For these individuals, the professional staff of the institution recommended continued educational programs rather than some work experience. Twenty-two of the Leesville subjects were in school full time and no attempt was made to place them in jobs. Three subjects were discharged from Leesville and were not employed on the outside. Our records indicate that they had no work experience.

In comparing (see Table IX) the three criterion groups by age, there was little difference between groups either by mean, age, or variability in age. The lower Standard Deviation of the competitively employed group indicates that they

TABLE IX

DETAILED DESCRIPTION OF EACH CRITERION GROUP SAMPLE BY: AGE, IQ, SEX, AND RACE (N=322)

		Competitively Employed	Sheltered	Day Care
N		20=(6%)	239=(74%)	63=(19%)
Age:	Mean	21.14	22.19	20.13
	SD	2.78	4.24	5.05
	Range	15.3-25.8	15.0-30.6	15.0-30.1
IQ:	Mean	62.8	42.65	33.76
	SD	23.19	14.28	8.1
	Range	31-80	12-98	25-58
Sex:	Male	17 (9%)	134 (72%)	36 (19%)
	Female	3 (2%)	105 (77%)	27 (20%)
Race:	White	19 (7%)	184 (72%)	51 (20%)
	Negro	1 (1%)	55 (80%)	12 (17%)

were younger than the other groups.

Although the MacDonald study found that IQ did not differentiate their groups, data from the present VCS Research Sample reveals that there is a relationship between IQ and level of employment. The competitively employed had the highest mean IQ and the sheltered employed and a higher mean IQ than the day care non-employed group. A greater variability of IQ among the competitively employed is also to be noted, suggesting that other factors besides relatively higher IQ contribute to competitive employment potential. There were fewer residents with higher IQ within the day-care group.

Assuming that sex and race have no relationship to level of employment we would not expect the distribution by sex and race to be different from the total criterion sample among the three criterion groups for the total research sample of 332, 6% were competitive, 74% were sheltered and 19% were day care. We found that for males and for whites that they are approximately the same, but for females and Negroes, a smaller percentage (2% and 1% respectively) fell in the competitively employed group. This fact is important since we found no difference between male and female in the normative data. The ratio of Negro to whites was different than our general population ratio for the sheltered (77%-23%) and day care (81%-19%) but was substantially different in the competitively employed group (95%-5%).

RESULTS OF CRITERION GROUPS COMPARISON

(A) Statistical Analysis Methods:

The mean and S.D. was calculated for each measure for each criterion group. The differences between the means of the competitively-employed and the non-employed groups were analyzed, using t-tests, as were the differences between the competitively-employed and sheltered-employed groups.

Table X presents the comparisons for each VCS measure. The means of each measure except for General Health and Physical Capacity were significantly different at .01 level or better between each criterion group. The differences were all in the same directions; the competitively-employed had the best or highest scores, then the sheltered group, and then the non-employed day care group had the poorest or lowest score. This was true for all measures except General Health. The difference in the General Health measure between the competitively-employed and non-employed was not significant, which points out that it was the weakest measure in the battery. Physical Capacity was also found to be a weak

TABLE X

COMPARISON OF EACH VCS MEASURE WITH THREE CRITERION GROUPS MEAN SCORE

	A Competitively Employed			B Sheltered Employed			C Non Employed			t-ratios and Significance Levels		
	N	MEAN	S.D.	N	MEAN	S.D.	N	MEAN	S.D.	A-C	A-B	B-C
WH	20	20.90	4.63	239	28.34	7.69	61	37.49	9.73	10.09*	6.34*	6.77*
PC	20	15.48	.77	239	13.44	2.51	61	10.59	3.13	3.79*	.85	2.36**
SM	20	83.15	6.21	239	71.83	8.37	61	58.90	8.38	13.55*	7.42*	10.69*
GH	20	3.77	.33	239	3.31	.68	61	2.53	.83	1.15	.53	.72
MS	20	404.80	60.42	235	846.79	473.93	50	1579.06	610.43	13.30*	13.03*	7.91*
AA	20	3.27	.99	238	1.70	1.24	61	.75	.87	9.97*	6.53*	6.85*
DA	20	48.30	11.20	234	28.34	13.79	52	13.21	9.09	12.24*	7.30*	9.74*
DF	20	31.60	14.74	239	12.96	13.92	58	1.66	6.20	8.60*	5.32*	9.26*

** Significant beyond .05.
* Significant beyond .01.

measure. Physical Capacity was different at the .01 level of significance between the competitive and non-employed, but only significant at the .05 level of confidence between the sheltered and non-employed. The PC difference between competitive and shletered was not significant.

In differentiating between the competitively-employed and the non-employed Social Maturity was the strongest measure, with Manual Skills, Disc Assembly and Work Habits also strong. Manual Skills was the strongest measure when differentiating between competitive and sheltered groups. Social Maturity was the strongest measure when comparing the sheltered with the non-employed.

The measures did individually and collectively differentiate significantly between the three criterion measures. The variations of the various measures limit the individual predictive ability on any or all the measures. Social Maturity, Disc Assembly and Manual Skills could be considered the strongest measures and General Health and Physical Capacity ratings were the weakest. Direction Following, Disc Assembly, Social Maturity differentiated between the sheltered and non-employed better than between the sheltered and competitively employed. Manual Skills was the only measure that differentiated better between the competitively employed and sheltered employed than between the lower criterion groups.

SUMMARY:

The VCS did differentiate among and between three distinct criterion groups, the sheltered employed, competitively employed, and non-employed groups.

CHAPTER VI

ANALYSIS II: COMPARISONS WITHIN LEVELS OF "SHELTERED EMPLOYED" GROUP

Initially this research project was concerned with the validation of the VCS between three settings, the day care, sheltered employment, and competitive employment which was described in Chapter V. Since the instrument did show potential to differentiate between these settings, it was hypothesized that the instrument could differentiate between levels of the sheltered employed group. If the VCS is found to be able to differentiate between levels of jobs within a sheltered setting then mentally retarded could be matched to a more appropriate job within a sheltered workshop, institution work placement program or possibly even with a competitive employment setting.

If the VCS is found to have this depth potential, the information will also provide suggestions for redesigning jobs and developing job ladders for the mentally retarded.

For training purposes the finer differentiation would provide more specific suggestions for training. Training could then emphasize the next higher skill required rather than a global type skill.

For this analysis the VCS scores were first compared with the five general job levels that residents had been assigned within the institution.

Secondly the five general job levels were rated by a group of judges and specific jobs reassigned to new job levels on the basis of these ratings. The VCS score of residents were then compared with these new job levels of assigned residents.

Assigned Job Level Analysis:

Within the broad framework of institutional work performed by retardates at Pinecrest all jobs included in the Pinecrest on-going work-training program had been classified into one of five general levels of complexity. These levels have served for several years as the basis for assignment of residents in the work-training program at Pinecrest. This classification also determined the rate of pay residents received for their work, (Cassel, R. H., October, 1964). The general job description for any given job level was designed to be a representative description of all jobs classified under that level. These assigned job levels are described as follows:

Job Level I: This position consists of the very simplest type of routine duties involving only one task. This task generally consists of repetition of simple manual movements. Work is usually performed in the same specific location or requires limited movements on the part of the individual. Constant supervision over this position is required and careful review of work performed is necessary. Correction of mistakes in methods of work as well as work actually performed are generally made on the spot as often as necessary.

Job Level II: This position consists of the very simplest type of routine duties involving two or more separate tasks. These tasks would be independent of each other, not necessarily related, although in most instances they would be related. This position may also consist of a single slightly more complex task that may require limited judgment and ability to adjust to new situations. Supervision over this position is exercised in the form of determining work progress on a daily basis. Also, supervision over the accuracy of work is important. This position also involves limited planning ahead.

Job Level III: This position consists of more complicated work in the execution of two or more separate tasks. The complexity of these tasks is created by the slight independence of operation as well as the requirement for more judgment and physical dexterity. This level of position may also be characterized by the operation or assistance in operation of a large machine, which involves starting and stopping motors, making simple adjustments, or having to do something to the machine at various times. The supervision of this position is moderate and consists primarily of regular check and observances of on-the-job performance.

Job Level IV: This is a more complicated job consisting of a series of fairly complex tasks. The primary characteristic of jobs in this category is the independence of the incumbent in performance of his duties. The person in this position is responsible for starting the operation, planning all steps and then carrying out the duties with very little supervision. Judgment and timing are required to some degree in this type of work. Positions of this nature may be compared to the simplest employee position.

Job Level V: Same as Job Level IV, except that incumbent performs the duties without supervision.

To determine the relationship of assigned job levels and scores on specific VCS measures, the mean, standard deviation, median, and quartile scores were computed for all residents in the Research Sample assigned to each job level. Since there were only 20 subjects in job levels IV and V, these two levels were combined and treated as one for purposes of statistical comparison. These data can be found in Table XI.

Correlations were computed and statistical comparisons were made between scores on each of the eight VCS measures, life age, and IQ and the six-level assigned job levels.

Results:

Table XII shows that there is a positive and significant correlation of each measure with the assigned job levels. The Disc Assembly (DA) test had the strongest relationship with the assigned job levels with a r=.59. The Work Habits (WH) measure had the next strongest relationship with a r=.54. With a r=.50, the Social Maturity (SM) measure was strongly related to the job levels. The MacDonald study reported that IQ did not differentiate between criteria, while in this analysis IQ had a r=.41 and was related to the assigned job levels, five measures WH, SM, MS, DA, and DF were stronger in their relationship to the job levels than the IQ measure. Arithmetic Achievement (AA) had a relationship r=.39, very similar to that of IQ with the assigned job levels. Physical Capacity (PC) was the weakest measure with a r=.16. General Health (GH) was relatively weak with a r=.32. Assigned job levels could be considered a valid criterion to determine concurrent validity of the VCS.

TABLE XI

COMPARISON OF EACH VCS MEASURE WITH JOB LEVELS WITHIN THE SHELTERED EMPLOYED GROUP (N=306)

O LEVEL

(Not Working)

	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Work Habits (WH)	76	37.78	9.56	52.0-14.5	45.3	38.0	31.5
Physical Capacity (PC)	76	10.74	3.06	4.0-16.0	8.3	11.0	13.0
Social Maturity (SM)	76	59.9	7.80	34.0-93.5	56	60	64
General Health (GH)	76	2.50	.78	1.0- 4.0	2.0	2.5	3.0
Manual Skills (MS)	63	1559"	588"	3198"-425"	1936"	1456"	1141"
Arithmetic (AA)	76	0.86	.95	0- 5.3	0.2	0.6	1.3
Disc Assembly (DA)	64	13.63	7.12	0-38	7	14	18
Directions (DF)	74	2.12	6.15	0-40	0	0	0
IQ	76	33.89	8.00	25.77	28	31	37
Age	76	20.81	4.53	15.0-30.1	16.6	19.8	24.3
Years of Inst'n	76	6.99	2.13	0.3-21.8	3.8	6.5	9.5
Age at Admission	76	13.74	3.34	1.2-29.1	10.4	12.9	17.2

TABLE XI (Cont'd)

I LEVEL

(Sheltered Employed)

	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Work Habits (WH)	106	31.09	7.13	49.0-15.3	36.0	30.7	26.0
Physical Capacity (PC)	106	13.13	2.45	6.0-16.0	11.6	13.3	15.3
Social Maturity (SM)	106	69.03	7.02	56.5-90.0	65.0	68.0	72.5
General Health (GH)	106	3.24	.67	1.5- 4.0	2.7	3.3	4.0
Manual Skills (MS)	104	993"	523"	3196" -329"	1160"	813"	628"
Arithmetic (AA)	106	1.33	.92	0.0- 5.0	0.4	1.1	1.8
Disc Assembly (DA)	104	22.77	9.75	0-45	16	23	29
Directions (DF)	106	9.50	11.35	0-50	0	3	15
IQ	106	39.11	10.95	14-70	31	40	47
Age	106	21.49	3.90	15.0-30.0	18.6	21.1	24.8
Years of Inst'n	106	7.06	4.28	0.1-19.4	3.2	6.9	10.4
Age at Admission	106	14.24	4.35	1.3-29.0	10.2	13.6	17.8

TABLE XI (Cont'd)

II LEVEL

(Sheltered Employed)

	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Work Habits (WH)	82	25.21	5.10	41.3-15.3	28.6	25.2	21.0
Physical Capacity (PC)	82	13.81	2.30	4.0-16.0	13.0	14.3	16.0
Social Maturity (SM)	82	73.74	6.90	53.0-91.0	68.5	73.5	78.5
General Health (GH)	82	3.39	.51	1.5- 4.0	3.0	3.6	4.0
Manual Skills (MS)	81	715"	393"	2114" -323"	869"	587"	469"
Arithmetic (AA)	81	1.89	1.20	0.0- 4.8	1.0	1.7	2.6
Disc Assembly (DA)	81	33.07	9.80	1-71	24	32	43
Directions (DF)	82	15.58	10.40	0-46	0	15	24
IQ	82	44.72	11.40	.2-94	35	44	51
Age	82	23.00	3.84	15.3-30.6	20.1	23.1	25.6
Years of Inst'n	82	8.60	4.35	0.4-19.2	5.6	8.7	11.5
Age at Admission	82	13.70	4.26	3.2-27.1	10.8	13.8	16.1

TABLE XI (Cont'd)

III LEVEL

(Sheltered Employed)

	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Work Habits (WH)	22	22.60	3.70	34.3-13.5	26.0	21.2	20.0
Physical Capacity (PC)	22	14.18	1.74	9.5-16.0	12.3	14.6	16.0
Social Maturity (SM)	22	75.61	6.36	50.0-87.5	71.5	75.0	79.5
General Health (GH)	22	3.33	.44	2.0- 4.0	3.0	3.3	4.0
Manual Skills (MS)	22	647"	168"	1870" -356"	758"	522"	436"
Arithmetic (AA)	22	1.89	7.60	0.0- 3.6	1.2	2.0	2.9
Disc Assembly (DA)	22	36.27	10.80	7-68	25	38	47
Directions (DF)	22	19.36	13.75	0-50	11	17	26
IQ	22	45.59	10.40	15-71	36	45	54
Age	22	24.32	1.80	17.0-30.5	20.5	24.2	28.0
Years of Inst'n	22	11.34	4.60	1.1-22.5	7.5	11.3	14.8
Age at Admission	22	12.95	3.61	7.6-24.3	10.7	11.8	14.1

TABLE XI (Cont'd)

IV-V LEVEL

(Sheltered Employed)

	N	MEAN	SD	RANGE	Q_1	Q_2	Q_3
Work Habits (WH)	20	21.11	5.34	32.0-14.7	26.5	18.3	16.6
Physical Capacity (PC)	20	15.04	.74	13.0-16.0	14.7	15.4	16.0
Social Maturity (SM)	20	82.78	6.54	61.5-93.5	81.3	84.0	90.3
General Health (GH)	20	3.68	2.44	2.3- 4.0	3.5	3.8	4.0
Manual Skills (MS)	20	494"	153"	1453" -297"	496"	396"	362"
Arithmetic (AA)	20	2.95	1.20	0.6- 5.2	2.3	3.1	3.7
Disc Assembly (DA)	20	46.30	11.32	15-64	38	49	58
Directions (DF)	20	26.25	28.00	0-60	19	28	39
IQ	20	58.60	11.64	30-78	49	61	72
Age	20	24.15	1.65	18.8-29.5	20.8	24.4	27.4
Years of Inst'n	20	9.94	4.20	1.1-17.4	7.5	9.8	13.1
Age at Admission	20	14.07	3.50	9.9-23.5	11.0	13.5	15.9

Discussion:

We expected stronger statistical relationship between the VCS measures and the assigned job levels. We tried to decide why they were not stronger and why for example LA and GH should be related to assigned job levels.

It could therefore be concluded that either the VCS scores were actually not significantly related to a criterion of job difficulty or complexity as defined in the Pinecrest Work-Training Program or that the criterion itself was suspect if not in theory then in function.

Spot checks of the work performed on several jobs to which a certain level had been assigned subsequently led to the suspicion that in actual practice, the assignment of job levels in the operation of the Pinecrest Work-Training Program apparently was being determined by evaluations of individual residents rather than job requirements. In some cases it appeared that the job level had been assigned to the individual as a reward or on the basis of professional staff whims rather than to the job he was working on.

There were several understandable reasons for this apparent bias, tenure, life age, reward for good behavior (or vice-versa), supervisory partiality, or more pay or status for a "good old boy". The levels thus assigned would naturally have little or no relation to the actual level of work difficulty or complexity involved in the job on which the subject was working, or to his vocational capacity.

Rated Job Complexity Analysis:

Consequently, in order that the purpose of the concurrent validity analysis be served, more objective job level criteria appeared necessary. It was felt that this could be accomplished by (1) determining the kind and type of work each of the residents in the Research Sample was doing and expected to do; and (2) based on this information, establish a rating for each job on a progressive scale of difficulty or complexity.

This required that each job[1] be studied, using modified job analysis techniques, and a specific job description prepared for each.

Since time would not permit analysis of each of the 307 jobs involved in the study, a sample group of 78 subjects was randomly selected (25% of the Pinecrest Research Sample), with the restrictions that (1) as equal number as possible be included from each of the assigned job levels, (2) as equal number as possible of males and females be included for each level, and that (3) the subject had been working on the job for at least six months prior to testing.

---

[1] The term "job" as used here is defined as an aggregation of tasks, duties, and responsibilities requiring the services of one individual.

Information for the individual job descriptions was obtained by first requiring the appropriate work supervisors to complete a simple brief questionnaire relating to the job at which the resident was working. They were requested to give a general description of the job, as they preceived it, list the most important duties or tasks required of the worker, and indicate any tools or equipment used in the work.

Response from these questionnaires were generally adequate. The questionnaires, however, also served as a stimulant to many work supervisors to consider for the first time the work their retarded "helpers" were really doing in terms of specific job duties and specific job responsibilities. This proved to be particularly helpful to the job analyst when he later discussed the job with the supervisors.

Concurrently, on-the-job observations of the actual work being performed were made and recorded by a project staff member trained in job analysis techniques. These observations were primarily concerned with the kind and number of tasks the worker performed, what he did, why and how he did it, and with the scope of the job, its precise limits, where it began and where it ended. Detailed time and motion studies were not involved in any sense, nor deemed necessary.

The observed work performed and the questionnaire results were then discussed in detail with each work supervisor to (1) verify over all job content and scope, significant tasks, duties and responsiblities, job variations and interchangeability; (2) determine basic skills, knowledge, and abilities necessary to perform the work; and (3) assess the degree of supervision required. Job satisfaction or work satisfactoriness was not considered nor discussed in order to avoid subjectivity as much as possible.

Using the composite information derived from these sources, written job descriptions were prepared covering the 78 jobs held by the subjects in this sample. The descriptions were in the form of concise statements regarding the actual tasks performed by the worker, giving a brief factual portrayal of the identity, nature, content, and requirements of each job. The primary consideration in preparing the descriptions was to so organize and present the statements that an uninformed reader could obtain a clear concept of the work performed as well as the performance requirements.

The written job descriptions, coded so as to not identify the subjects, then were rated independently by eleven raters on an eleven-point scale of job difficulty or complexity, ranging from 0.5 to 5.5. These raters, who had no knowledge of the work-training program job levels assigned to these jobs, were drawn from the professional and clerical staff of Pinecrest. They were instructed to review the job description, assess the relative level of each of six basic elements of the job, and then arrive at a single over-all rating score for each described job. In considering the over-all rating for the job they were instructed to give weight to specific ratings of any element or elements they judged more significant to that particular job.

	JOB ELEMENT	SCALE 0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5
I.	Number and type of tasks:	Few...........................Many Simple.......................Complex Gross Motor..............Fine Motor
II.	Inter relatedness of tasks:	Independent..............Sequential Single Goal..........Multiple Goals
III.	Task Structure:	Repetitive...........Non-Repetitive Short Cycle..............Long Cycle
IV.	Degree of job rigidity:	Set Procedures..........Innovations
V.	Judgment, Knowledge, or Cognitive Impoition required.	Low.........................High
VI.	Supervision.	Close................Self Direction

These six basic job elements (or dimensions) to be considered were contained in the preceding definitive outline that was provided to each rater to use as a guide in his evaluation.

Raters were instructed to rate according to a standard of institutional-type work as performed typically by retardates. They were cautioned to refrain from drawing comparisons in their evaluations with the relative levels of job outside the institution on the open competitive labor market.

Using the over-all rating of each job as the rater score, the median rating of the eleven raters was then obtained for each job. These median ratings were then multiplied by ten to obtain a score on a scale ranging from 5 to 55.

An inter-rater reliability determination was made using the Kendall Coefficient of Concordance based upon the jugements of the eleven raters with the following results; Kendall W=.756, which indicated that there was highly significant degree of agreement among the raters generally. (Table XIII shows the Pearson Product-moment intercorrelation for the eleven raters. The mean inter-rater reliability coefficient =.78).

These raters job difficulty complexity scores were considered to be a more reliability and objectively based

TABLE XIII

Inter-Rater Reliability Coefficients,
Mean Ratings and Standard Deviations,
For Job Level Criterion II (Rated Work Complexity)

Rated Case N=90

Rater/Rater	1	2	3	4	5	6	7	8	9	10	$\bar{X}$	SD
1.	-	.84	.79	.86	.86	.82	.83	.73	.93	.80	2.71	1.39
2.		-	.79	.73	.80	.82	.84	.81	.81	.70	3.33	1.56
3.			-	.72	.76	.87	.74	.76	.83	.67	3.54	1.30
4.				-	.77	.75	.69	.67	.84	.71	3.43	1.28
5.					-	.79	.74	.65	.89	.79	3.88	1.06
6.						-	.78	.72	.87	.70	3.77	1.32
7.							-	.84	.80	.72	2.62	1.50
8.								-	.71	.63	2.84	1.57
9.									-	.84	3.03	1.47
10.										-	3.26	1.38

Mean Inter-Rater Reliability Coefficient = .78

criterion for the concurrent validity assessment of the VCS than the previous analyzed assigned job levels used in the Pinecrest Work-Training Program.

Statistical comparisons were then made between the VCS scores, plus life age, and IQ, and the composite job difficulty complexity ratings, using the same procedures as the assigned job levels.

Results:

The product-moment correlations between the VCS scores and the rated job difficulty complexity scores were substantially higher, (see table XII). Significant relationships were found between the rated job levels and the IQ, Social Maturity, Manual Skills, and Disc Assembly measures. Disc Assembly (DA) had the highest correlation $r=.71$. As a result of the rating of the jobs complexity the measure of IQ was found to be more strongly related to the job levels. Social Maturity was found to have a strong relationship with job levels. Physical Capacity which had a weak relationship with job levels was substantially improved when the job complexity was rated. This might suggest that in actual practice supervisors accept some limitations in Physical Capacity although the limitation might affect job performance. General Health remained the weakest measure with a $r=.35$. The correlation of Life Age with the rated job difficulty complexity

TABLE XII

Concurrent Validity Coefficients, Means And Standard Deviations of Ten VCS Measures And Two Job Level Criteria

Measures	Criterion I (Assigned) N=307			Criterion II (Rated) N=78		
	r	M	SD	r	M	SD
Work Habits*	.54	29.33	8.34	.51	24.70	6.29
Physical Capacity	.16	13.36	5.03	.43	14.04	1.84
Social Maturity*	.50	69.75	10.46	.64	74.82	9.24
General Health	.33	3.20	.74	.36	3.49	.52
Manual Skills*	.47	937.12	547.32	.63	661.13	356.89
Arithmetic Achievement*	.39	1.57	1.21	.56	1.93	1.17
Disc Assembly*	.59	26.65	14.29	.71	35.77	14.63
Direction Following*	.46	11.61	14.04	.55	17.36	13.75
IQ	.41	41.66	13.31	.63	46.87	14.67
Life Age	.32	21.69	4.47	.02	22.64	4.30
Criterion I (Assigned)	1.00	1.35	1.17	.58	2.51	1.20
Criterion II (Rated)	-	-	-	1.00	3.29	1.35

Multiple Correlation of Six Starred (*) VCS Measures and Job Level Criterion II:.79

scores diminished. The multiple correlation of the six strongest VCS measures and rated job difficulty was found to be .79.

Discussion:

It appears that the VCS can not only discriminate between the three major criterion levels competitively employed, sheltered employed, and day care, but can also discriminate between rated job levels within the sheltered employed group. Using a modified job analysis rating technique it is possible to improve the predictive ability of the VCS by improving the criterion measure. The instrument can be utilized for this type of prediction using only six of the eight measures. Physical Capacity and General Health were the weakest measures and could be eliminated from the battery. The finding relating to Life Age suggest that within an institution setting that residents sometimes are placed on jobs requiring higher level skills on the basis of their tenure rather than their ability.

These findings suggest that the VCS does differentiate between job levels within an institutional setting and can be utilized for redesigning jobs for the retarded and for developing job ladders. The VCS can be administered to retardates and then utilizing their scores predictions can be made concerning the level of job they should assigned. Using a rated job difficulty complexity technique of the jobs available in a work setting, the jobs can be redesigned and matched to the retardates ability as measured by the VCS.

CHAPTER VII

ANALYSIS III: What Does the VCS Measure?

Since the VCS measures did differentiate between the three criterion groups; competitively employed, sheltered, and day care unemployed as well as between job levels within the sheltered employed groups, intercorrelations between each of the eight VCS measures were computed to determine what the VCS might measure. An intercorrelation of the eight VCS measures along with Life Age and IQ was also computed.

The computed intercorrelations of the ten indices (including Life Age and IQ) revealed a high degree of overlap of the IQ, Arithmetic Achievement, and Social Maturity measures. Both the Disc Assembly and Direction Following scores significantly correlated with those of IQ and Social Maturity (see Table XIV). The Disc Assembly and Manual Skills tests were also found to be closely related to each other. This was expected as was the relationship between Direction Following and Arithmetic Achievement, since the Disc Assembly test involves some degree of Manual Skill and the Direction Following test is structured on several arithmetical concepts. The physiological measures of Physical

TABLE XIV

Intercorrelations of 8 VCS Measures Life Age, and IQ.

N=307

Measure	1	2	3	4	5	6	7	8	9	10
1. Work Habits	-	.11	.52	.32	.52	.38	.54	.42	.38	-.12
2. Physical Capacity		-	.26	.22	.26	.15	.19	.28	.15	-.05
3. Social Maturity			-	.20	.56	.67	.61	.61	.67	.12
4. General Health				-	.38	.20	.33	.21	.20	-.04
5. Manual Skills					-	.53	.71	.51	.53	-.08
6. Arithmetic Achievement						-	.58	.72	.81	-.02
7. Disc Assembly							-	.57	.60	.07
8. Direction Following								-	.72	.03
9. IQ									-	-.04
10. Life Age										-

Capacity and General Health were related only to each other, while Life Age was apparently not related to anything else in the battery.

The intercorrelations was computed for only the eight VCS measures using an N of only those cases where scores were available on all eight measures (see Table XV). This analysis revealed a high degree of overlap only for Direction Following and Manual Skills. Direction Following was also found to be related to Arithmetic Achievement. Work Habits was found to be related only to Disc Assembly. General Health and Physical Capacity again were found to be related only to each other. Social Maturity was not highly related to anything else in the battery.

This intercorrelation analysis led to computation of a factor analysis to determine what common factor were involved in these measures. A principal axis factor analysis, (see Table XVI) was computed. Because of difficulties in interpreting this unrotated factor analysis, two orthogonal rotations were calculated by hand until maximum fit was obtained (see Table XVII).

This rotated analysis indicated the existence of four factors:

TABLE XV

Intercorrelations of 8 VCS Measures

N=300

Measure	1	2	3	4	5	6	7	8
1. Work Habits	-	.02	-.29	.00	-.25	-.23	.50	.08
2. Physical Capacity		-	.52	.11	-.02	.19	.01	.17
3. General Health			-	.22	-.16	.33	-.06	.13
4. Social Maturity				-	-.27	.30	.29	.28
5. Manual Skills					-	.21	.36	.75
6. Arithmetic Achievement						-	-.15	.59
7. Disc Assembly							-	.30
8. Direction Following								-

Mean Intercorrelation =.242

TABLE XVI

Unrotated Factor Analysis

Variable	Factor 1	Factor 2	Factor 3	Factor 4
WH	-.125	-.639	-.270	-.063
PC	-.303	.369	-.541	-.140
GH	-.365	.545	-.347	-.017
SM	-.441	.030	-.071	.378
MS	-.765	-.300	.118	-.207
AA	-.556	.444	.271	.117
DA	-.364	-.560	-.268	.199
DF	-.858	-.068	.247	-.104
Percent variance	47.45	31.27	15.36	5.91

Total communality accounted for = 100%
Factor coefficient at $P < .01 = .229$

TABLE XVII

Rotated Factor Analysis

Variable	Factor 1	Factor 2	Factor 3	Factor 4	H^2
WH	.690	-.007	.036	.142	.501
PC	.029	.009	.733	-.006	.541
GH	-.221	.144	.689	.047	.550
SM	.005	.324	.178	.446	.343
MS	.414	.743	.087	-.017	.732
AA	-.402	.602	.240	.093	.594
DA	.603	.182	.006	.402	.558
DF	.158	.880	.141	.025	.813

Factor I, representing 47.45% of the variance was positively loaded with the following three measures in the following order: Work Habits, Disc Assembly and Manual Skills. The measure of Arithmetic Achievement was negatively loaded on this factor. This factor seems to be related to non-intellectual routine work.

Factor II, representing 31.27% of the variance, seemed to be one of general intellectual ability. Factor II was heavily positively loaded with Direction Following, Manual Skills, Arithmetic Achievement and Social Maturity.

Factor III, representing 15.36% of the variance seemed to be related to Health and Physical Capacity. Only the Physical Capacity and General Health ratings were highly positively loaded on this factor.

Factor IV, representing 5.91% of the variance is made up of the Social Maturity scale and the Disc Assembly test. This factor might be interpreted as related to Social Maturity and acceptance of authority or the maturity of sticking to an assigned task.

Except for Social Maturity, Disc Assembly, and Manual Skills the five other VCS variables load on only one factor. Work Habits is loaded with factor I which seems to be non-intellectual routine work. Physical Capacity and General

Health load only on factor III. Arithmetic Achievement loads only on the intellectual factor II, and is negatively loaded on factor I. Direction Following is loaded only on the intellectual factor II. The Social Maturity measure is loaded on factor II and on factor IV. Manual Skills is loaded on factors I and II, while Disc Assembly is loaded on factors I and IV.

In another factor analysis including the eight VCS measures Life Age, IQ, Criterion of Assigned Job Level, and Criterion of Rated Job Level, a factor related to how the "good ole boy" gets assigned to a higher job level was found. Criterion I and Life Age was heavily loaded with this factor. The existence of this factor provides credibility to our assumption of tenure bias in the assigned job levels.

SUMMARY:

In analyzing what the VCS measured we found that most of the measures were independent of each other. Direction Following was found to be related to Manual Skills and Arithmetic Achievement. Physical Capacity and General Health were related only to each other. Work Habits and Disc Assembly were related to each other. The VCS seems to consist of four factors: non-intellectual routine work, intelligence, physical capacity - health and social maturity.

CHAPTER VIII

DEVELOPMENT OF COMPOSITE MEANINGFUL SCORE:

When the MacDonald Research Group found that there were eight measures capable of discriminating between the three criterion groups, the employed group, the sheltered group, and the work activity group, they attempted to integrate these measures so that their individual predictive ability could be translated into some meaningful and reportable form. The use of regression equations was rejected because of methodological difficulty and because of the desire to preserve the eight measures remaining for their potential use as psychograph.

MacDonald's Research Group elected to attempt to summate the scores in terms of quartile placement on each factor. In order to compensate for the varying discriminating power of the various measures, they arranged the measures in ascending order of descriminative power according to chi square significance level. Weights were then assigned to each measure based on equal divisions of the baseline of the chi square distribution.

When our research came to the point of attempting to develop a meaningful composite score several possibilities were investigated:

1. One technique considered was the simple summation of total scores of each measure.
2. The second alternative was to change all scores to a standard score for each measure and then total the (z) score.
3. The research group considered the use of Beta Weights, which they considered would be best if possible. We found that the criterion measure could not be considered a continous distribution, but only as three discrete constellations.
4. We considered using discrete measures based on chi square weights according to size of significance level and their quartile ratings.
5. The research team considered deriving a standard (z) score for each measure and then multiplying by factor weights for each measure. We could then add up the derived measure to secure a composite score.
6. Another alternative could be to take Beta Weights from the sheltered group and generalize them to the total sample.
7. We considered taking the critical difference and weigh them according to their rank order and securing standard (z) scores for each measure.

Gulliksen (1950 pg. 327) states that precise method of weighting is not important unless we are dealing with relatively few tests that are not highly correlated with each other.

If a criterion is available, multiple correlation methods give the best weights for predicting that criterion. This technique was not utilized because of the methodological difficulties. Guilford (1936 pg. 390-404) reports that in dealing with more than three variables, it is necessary to use special computational methods.

In addition to specifying the best set of weights to use for each of the tests in a battery, it is frequently desirable to eliminate some tests as well. General Health and Physical Capacity ratings could be eliminated if one is not concerned with the psychograph value of the measure.

Sometimes it is considered desirable to give greater weights to the more reliable tests but there is usually no special justification for the particular weights chosen.

The technique of developing a composite weighted score utilized by the MacDonald group was rejected for several methodogical reasons. For those who are interested in further investigating weighting by composite score based on significance level, we would suggest that you give Social Maturity, Manual Skills, and Disc Assembly a weight of three, Work Habits, Arithmetic Achievement, and Direction Following a weight of two, and General Health and Physical Capacity a weight on one.

Since the measures except for General Health and Physical Capacity did differentiate between groups and between job levels in the sheltered employed group, and the measures were generally independent of each other the standard score approach was taken.

STANDARD SCORE (z) APPROACH:

The scores on each of the eight measures were computed to a standard score (z) using the formula:

$$z=\frac{x-\bar{X}}{SD}$$

for 302 subjects available. The standard scores were then added for each subject which resulted in composite standard (z) score.

The competitive employed group (N=20) had a mean composite standard score of 9.27 and a standard deviation of 2.26. With this knowledge we found using one standard deviation below the mean for this group or a composite standard score (z) of 7.01 as a cutoff point we would lose 15% of our competitively employed group.

The sheltered employed group (N=233) had a mean composite standard (z) score of 1.93 and a standard deviation of 4.51. Sixty-eight percent of the sheltered employed cases had composite (z) scores between -2.58 and 6.44 and 97% of the cases had composite (z) score below -2.54.

There was no overlap between the three group when using one standard deviation separation. The overlap was found only beyond the one standard deviation level. The differences between the mean of the composite standard score of the competitively employed, sheltered employed, and non-employed groups were analyzed using t-test. The comparisons yielded the following t ratios:

Competitives vs non-employed	19.51
Competitive vs sheltered	11.36
Sheltered vs non-employed	12.00

These differences were found to be significant at the .01 level or better.

In utilizing the composite score technique to predict vocational potential consider the nature of the population in this research. If your subjects will be assigned or trained in a setting similar to Pinecrest then generalization may be assumed. It is suggested that a table of standard scores (z) be computed for ease in converting raw VCS scores to the composite standard (z) scores.

SUMMARY:

Several techniques were considered for the development of a weighted composite score for the VCS measures. The use of standard scores was selected. It was found that the mean composite standard (z) scores were significantly different between three criterion groups only accured beyond the one standard deviation level when composite standard (z) scores were utilized.

CHAPTER IX

DISCUSSION AND IMPLICATION OF RESULTS

The normative data for the eight VCS measures for Pinecrest's Sample, when compared with the MacDonald Sample suggests that at present the findings of this research must be related only to the population from which the data was collected. There is no doubt that the Pinecrest Sample was different from the MacDonald Sample. Careful consideration of the similarities of the populations should be made before the findings from the Pinecrest Research Sample are generalized to other settings. The techniques and procedures can be generalized since the eight VCS measures maintained their reliability. The VCS measures were easily administered. They can be administered by college students or minimally trained persons without effecting reliability. The ability to utilize college students and untrained persons to administer an instrument that measures vocational potential of the mentally retarded will contribute much to alleviate the problem of evaluation which previously required sophisticated professional personnel. Since there was no difference between male and females the findings suggest that separate sex norms are not required.

At the onset of this study, the VCS was seen as an experimental battery of predictive measures. Analysis I of this study, the cross-validation of the instrument with institutionalized retardates, found that the VCS did maintain its predictive ability. The measures did individually and collectively differentiate significantly between three criterion groups. These findings strengthened the potential of the instruments' predictive ability. The major purpose of the VCS is to predict as early as possible, a retarded individual's vocational potential. Optimally, this instrument was designed to designate a retarded adult as one who, following training, would positively obtain competitive employment or who would without deviation, be able to function only in a sheltered situation, or as one who would ultimately attain some other specifically disignated occupational level.

Although statistically the VCS is not capable of this exact prediction, the findings suggest the VCS, when properly administered, can be significant in aiding dicision making as to level of job training for the mentally retarded. The significance of this finding is that one can make more definitive training plans for a retarded adult by using the VCS measures as an indicator of vocational level.

The second analysis of this research dealt with the depth or internal strength of the measures. This consisted of a concurrent validity study. The VCS scores were found to be correlated with five job levels within a sheltered employed group. The measures did independently and collectively differentiate between sheltered job levels. Furthermore, by using a job rating procedure to eliminate the effect of tenure and the "good ole boy" phenomena, the VCS scores were found to be more highly correlated with the five job levels.

The findings suggest a technique for developing job ladders for the mentally retarded. Within a sheltered workshop or residential institution work setting, one can study all jobs available and organize them into levels of complexity and difficutly. With the job levels identified, all retardates can be evaluated on the VCS measure and then one can match the level of performance on the VCS against the level of job complexity. These findings further suggest that a Vocational Rehabilitation Counselor utilizing the results of the VCS might point out levels of work a client could perform within a private industrial setting. It now appears feasible for a competitive employer to analyze the job requirements and change requirements of the job to fit a handicapped workers work potential level. These findings also can be utilized to identify workers who are mis-assigned to jobs because of numerous factors including tenure bias and the "good ole boy" phenomena.

The intercorrelation analysis suggests that one could eliminate Physical Capacity and General Health measures from the battery if one excluded the broad range physical defectives. These two measures probably do not relate to employability but they are homogenous.

The factor analysis identified four factors. The identification of the first factor, non-intellectual routine work, suggests that counselors interested in achieveing job placement success should try to match a retardates ability to do routine non-intellecutal work with jobs with the similar requirements. The second factor of general ability can be interpreted to mean that level of intelligence or IQ does have high correlation with job levels. The third factor of Physical Capacity and General Health does support the counselors adamant requirements for adequate medical and physical examination. Although general intelligence can be a predictor of job potential, these findings suggest that counselors do not realize that there are levels of job complexities which can be accomplished by individuals with low IQ's. Generalizations of these findings to other institutions may be in error since the factor analysis was based on one institutions population, to programmatic constructs peculiar to that institution.

The use of standard (z) scores to develop a composite score without weights provides an adequate technique to evaluate retardates' vocational potential in settings and among populations different from the Pinecrest Sample.

SUMMARY:

This study reports the findings of three years research cross-validating the Vocational Capacity Scale with institutionalized retardates. The research found that the VCS maintained its predictive reliability when standardized in a residential setting. The VCS could be used to identify job levels within the sheltered employed group in a residential institution. The VCS could identify non-working residents with job potenital. This study also suggested that the VCS consisted of four factors, non-intellectual routine work, general health, general ability, and social maturity.

This study also pointed out that in considering vocational potential one must not only look at performance and predictor measures, but one must also re-assess the jobs that are available. One can achieve the greatest vocational success by restructuring jobs available to fit the vocational potential of an individual retardate.

REFERENCES

Adamson, William C. Diagnosis and evaluation: a lifetime process. 1961, Conference of Psychological Services in the Habilitation of the Mentally Retarded. The Training School at Vineland, N.J. Sept., 25-26, 1961.

Bijou, S. W., Ainsworth, M. H. & Stockey, M. R. The social adjustment of mentally retarded girls paroled from the Wayne Co. Training School. Amer. J. ment. Defic., 1943, 47,422-428.

Bijou, S. W. Behavior efficiency as a determining factor in the social adjustment of mentally retarded young men. J. genet. Psychol., 1944, 65, 133-145.

Bower, W. C. and Switzer, A. Adjustment of the Retarded, A Research and Demonstration Project. Office of Vocational Rehabilitation, Proj. No. 330-C, 1962.

Brown, S. J., Windle, C. & Steward, E. Statistics on a family care program. Amer. J. ment. Defic., 1959, 64, 535-542.

Burdett, A. D. An examination of selected prevocational techniques utilized in programs for the mentally retarded. Ment. Retard., 1963, 1, 230-237.

Burr, Emily T. The role of individual differences in vocational placement of the mentally retarded. Bulletin: Rehabilitation Review, Nov. 1956.

Cassel, Robert H. Ph.D The Coin of the Realm: Ment. Retard. October, 1964, Vol. 2, No. 5, p. 299-300.

Clarke, Mary Jane Ihle. A community placement program for the mentally retarded. Amer. J. ment. Defic., 1959, 64, 548-555.

Cobb, Henry V., Ph.D The Predictive Assessment of the Adult Retarded For Social and Vocational Adjustment. Dept. of Psychology, University of South Dakota, Vermillion, S.D. 1966.

Davies, S. P. The mentally retarded in society. New York: Columbia University Press, 1959.

Doll, E. A. Vineland Social Maturity Scale: Manual of Directions. Minneapolis: Educational Test Bureau, 1947.

Downing, J. Chronic mental hospital dependency as a character defense. Psychiat. Quart., 1958, 32, 489-499.

Dubrow, M. Sheltered workshops for the mentally retarded as an educational and vocational experience. Personnel Guid. J., 1960, 38, 392-395.

Dybwad, G. The problem of institutional placement for high-grade mentally defective delinquents. Amer. J. ment. Defic., 1941, 45, 391-400.

Fernald, W. E. After-care study of the patients discharged from Waverley for a period of twenty-five years. Ungraded, 1919, 5, 25-31.

Fry, L. M. A predictive measure of work success of high-grade mental defectives. Amer. J. ment. Defic., 1956, 61, 402-408.

Goffman, E. Characteristics of total institutions. In Symposium on preventive and social psychiatry. Washington: Walter Reed Army Institute of Research, 1957, 43-84.

Greene, Charlotte L. A study of personal adjustment in mentally retarded girls. Amer. J. ment. Defic, July, 1965, 108-113.

Hartlage, L. C. Factors affecting employer receptivity toward the mentally retarded. Amer. J. ment. Defic., July, 1965, 108-113.

Hegge, T. G. The occupational status of higher-grade mental defectives in the present emergency. Amer. J. ment. Defic., 1944, 49, 86-98.

Huber, W. G. and Soforenko, A. Z. Factors contributing to the vocational success or non-success of the institutionalized retardate. Train. Sch. Bull., 1963, 60 (1), 43-51.

Jackson, Sue and Butler, A. Prediction of successful community placement of institutionalized retardates. Amer. J. ment. Defic., 1963, 68, 211-217.

Jastak, J. Wide Range Achievement Test. Wilmington, Del., Chas. L. Story Co., 1946.

Kern, Robert V. Pre-Vocational Skills Evaluation: An Aid in Habilitation Services for Mentally Retarded Youth. Detroit, Mich., 1962.

Kolstoe, O. P. An examination of some characteristics which discriminate between employed and non-employed mentally retarded males. Amer. J. ment. Defic. 1961, 66, 472-482.

Kolstoe, O. P. The employment evaluation of the mentally retarded. In: Work Evaluation and Employment Perparation Services for Mentally Retarded Adults. Washington, D. C. Goodwill Industries of Amer., Inc. 1961, 47-50.

Kolstoe, O. P. Language in Employability. Delivered at a symposium at Univ. of Conn., August, 1965.

Kolstoe, O. P. & Shafter, A. J. Employability predictions for mentally retarded adults; a methodological note. Amer. J. ment. Defic., 1961, 66, 287-289.

Krishef, C. H. An analysis of some factors in the institutional experience of mentally retarded discharges from the Owtonna State School that influence their successful or unsuccessful community adjustment. Unpublished manuscript, School of Social Work, Univ. of Minn., 1957.

Krishef, C. H. Reynolds, M. C. & Stunkard, C. L. A study of factors related to rating post-institutional adjustment. Minn. Welfare, 1959, II, 5-15.

Ladas, P. G. Work sample learning rates of the mentally retarded trainee as indicators of production in a work-training center. Personnel Guid. J., 1961, 39, 396-402.

Lemkau, P., Tietze, C. & Cooper, M. Mental-hygiene problems in an urban district. Third paper. Ment. Hgy., 1942, 26, 275-288.

Little, A. N. & Johnson, B. S. A study of the social and economic adjustments of one hundred thirteen discharged parolees from Laconia State School. Amer. Assn. Study. Feebleminded, 1932, 37, 233-251.

McPherson, G. E. Parole of mental defectives. Amer. Assn. ment. Defic., 1935, 40, 162-167.

Malzbert, B. Some statistical aspects of first admissions to the New York State Schools for mental defective. Amer. J. ment. Defic., 1952, 57, 27-37.

Meadow, L. & Greenspan, E. Employability of lower level mental retardates. Amer. J. ment. Defic., 1961, 65, 623-628.

Merril, M. Q. The relation of mental age to industrial efficiency of a group of mental deficient. J. Delinq., 1925, 9, 83-104.

Mursell, George R. A job analysis form for institutional jobs. Amer. J. ment. Defic., 1953, 57, 585-586.

O'Connor, N. & Tizard, J. Predicting the occupational adequacy of certified mental defectives. Occupat. Psychol., 1951, 25, 205-211.

Parnicky, J. J. & Hahn H. (ed) Evaluating and Developing Vocational Potential of Institutionalized Retarded Adolescents. E. R. Johnstone Training and Research Center, Bordentown, N. J., 1963, (VRA-RD 425).

Patterson, C. H. Methods of assessing the vocational adjustment potential of the mentally handicapped. Train. Sch. Bull., 1964, 61, 129-152.

Pinkard, C. Predicting Vocational Capacity of Retarded Young Adults. MacDonald Train. Center Found., Research Div., Tampa, Florida, 1963.

Popenoe, P. Success on parole after sterilization. Proc. Amer. Assn. Study Feebleminded, 1927, 32, 86-103.

Potter, H. W. & McCollister, Crystal, L. A resume of parole work at Letchworth Village. Proc. Amer. Assn. Study Feebleminded, 1926, 31, 165-188.

Raymond, G. S. Industrial possibilities of the feebleminded. Industrial Psychology, 1927, II, 473-478.

Roberts, J. R. Pennsylvania Bi-Manual Worksample: Examiner's Manual. Philadelphia: Educational Test Bureau, 1943.

Rockower, Leona D. W. A study of the use of sheltered workshops as an occupational training resources. Amer. J. ment. Defic. 1953, 57, 425-433.

Sabagh, G., Dingman, H. F., Tarjan, G., & Wright, S. W. Social class and ethnic status of patients admitted to a state hospital for the retarded. Pac. Sociol. Rev., 1959, 2, 76-80.

Shafter, A. J. The vocational placement of institutionalized mental defectives in the United States. Amer. J. ment. Defic., 1954, 59, 279-307.

Shafter, A. J Prediction of post-institutional vocational placement achievement. In: M. E. Wright & H. T. Croley (eds) Research in the Management of the Ment. Retarded Child. Winfield, Kansas, Winfield State Train. Sch. 1956, 194-203.

Shafter, A. J. Criteria for selecting institutionalized mental defectives for vocational placement. Amer. J. ment. Defic., 1957, 61, 599-616.

Sloan, W. Prediction of extramural adjustment of mental defectives by use of the Rorschach test. J. Consult. Psychol., 1948, 12, 303-309.

Solomon, P. Differential Rorschach scores of successfully and unsuccessfully placed mental defectives. J. Clin. Psychol., 1955, II 294-297.

Spitz, R. A. Hospitalism: An inquiry into the genesis of psychiatric conditions in early childhood. Psychoanal. Stud. Child., 1945, I 53-74.

Stephens, Will Beth Dodson. Success of Young Adult Retardates. Ph.D Dissert., Univ. of Texas, 1964.

Stanley, R. J. & Gunzburg, H. C. A survey of residential licenses from a mental deficiency hospital. Int. J. soc. Psychiat., 1956, 2, 207-213.

Storrs, H. C. A report on an investigation made of cases discharged from Letchworth Village, Amer. Assn. Study Feebleminded, 1929, 32, 220-232.

Tarjan, G. & Benson, F. Report on the pilot study at Pacific Colony. Amer. J. ment. Defic., 1953, 57, 453-462.

Tarjan, G., Dingman, H. F., Eyman, R. K., & Brown, S. J. Effectiveness of hospital release programs. Amer. J. ment. Defic., 1960, 64, 609-617.

Tobias, J. Evaluation of vocational potential of mentally retarded young adults. Train. Sch. Bull., 1960, 56, 122-135.

Town, Clara H. An investigation of the adjustment of the feebleminded in the community. Psychol. clinic, 1931, 20, 42-54.

Vail, David J. MD, Dehumanization and the Institutional Career. Thesis, 1966.

Wagner, E. E. & Hawver, D. A. Correlations between psychological tests and sheltered workshop performance for severly retarded adults. Amer. J. ment. Defic, 1965, 69 (5) 685-691.

Wallace, G. L. Parole of the feebleminded. Proc. Amer. Assn. Study Feebleminded, 1918-9, 23, 60-81.

Wearne, R. G. A study of the first hundred consecutive admissions to Wassaic State School in the year 1935. Amer. J. ment. Defic., 1942, 47, 231-235.

Wells, F. L. Mental Tests in Clinical Practice. Yonkers, N. Y.: World Book Co., 1927.

Whitney, E. A. A statistical study of children admitted and discharged from Elwyn. Amer. J. ment. Defic., 1948, 53, 182-186.

Windle, C. An exploratory study of unauthorized, absences from Pacific State Hospital. Train. Sch. Bull., 1959, 55, 73-75.

Windle, C. Prognosis of Mental Subnormals. Monograph supplement to Amer. J. ment. Defic., March 1962, pg. 66,119,127.

Windle, C. & Dingman, H. F. The front and back doors of a hospital for mental defectives. Train. Sch. Bull., 1959, 56, 8-14.

Wolfson, I. N. Follow up studies of 92 males and 131 female patients who were discharged from the Newark State School in 1946. Amer. J. ment. Defic., 1956, 61, 224-238.

**VOCATIONAL CAPACITY SCALE PROFILE SHEET

Raw Score   Standard Score

*Work Habits $\dfrac{\underline{\qquad\qquad} -29.63}{8.75} = \underline{\qquad\qquad\qquad}$

Physical Capacity $\dfrac{\underline{\qquad\qquad} -13.12}{2.80} = \underline{\qquad\qquad\qquad}$

Social Maturity $\dfrac{\underline{\qquad\qquad} -70.77}{10.02} = \underline{\qquad\qquad\qquad}$

General Health $\dfrac{\underline{\qquad\qquad} -3.20}{.84} = \underline{\qquad\qquad\qquad}$

*Manual Skills $\dfrac{\underline{\qquad\qquad} -917}{641} = \underline{\qquad\qquad\qquad}$

Arithmetic Achievement $\dfrac{\underline{\qquad\qquad} -1.73}{1.37} = \underline{\qquad\qquad\qquad}$

Disc Assembly $\dfrac{\underline{\qquad\qquad} -27.88}{14.86} = \underline{\qquad\qquad\qquad}$

Direction Following $\dfrac{\underline{\qquad\qquad} -13.33}{15.14} = \underline{\qquad\qquad\qquad}$

________________ Total composite
Standard Score.

-2.55   6.44

$\bar{x}$=-5.52	$\bar{x}$=1.93	$\bar{x}$=9.27
Non-Employed	Sheltered	Competitive

Prediction has 85% chance to be correct.

** Base on Pinecrest State School - Residential Institution normative data.

* Change signs - negative to positive on this test; high score is poor.

VCS #1
WORK HABITS RATING SHEET

Name: ______________________________ Date: ________________

Rater: ______________________________ Total Score: _________

LEARNING AND COMPREHENSION (Circle appropriate number under each heading.)

A. Response to Instruction

1. Needs little instruction and is able to follow through on a job.
2. Needs moderate amount of instruction and then is able to follow through on a job.
3. Needs a great deal of instruction and then is able to follow through on a job.
4. Even with a great deal of instruction was unable to follow through on a job without close supervision.

B. Concentration

1. Gives adequate attention to job at hand.
2. Gives fluctuating attention to job at hand.
3. Gives moderate attention to job at hand.
4. Unable to apply self to job at hand.

C. Adjustability to New Job Tasks

1. Adjusts well to new assignments.
2. Adjusts adequately (with minor difficulty) to new assignments.
3. Has difficulty adjusting to new assignments.
4. Cannot adjust to new assignments.

PERFORMANCE

A. Frustration Tolerance

1. Generally sticks a job in face of obstacles or setbacks.
2. Generally sticks to job but may show some distress.
3. Has considerable difficulty in sticking to job when faced with obstacles.
4. Cannot tolerate many obstacles to completion of job.

ⓜ

B. Consistency of Effort

1. Showed steady work behavior.
2. Showed moderately steady work behavior.
3. Was generally more erratic than not.
4. Very unstable behavior.

ATTITUDE TOWARD WORK

A. Adaption to Work Environment

1. Once familiar with shop requirements adjusts with little delay.
2. Once familiar with shop requirements adjusts satisfactorily.
3. Has difficulty adjusting even after becoming familiar with the shop requirements.
4. Cannot adjust even after becoming familiar with the shop requirements.

B. Motivation to Work

1. Usually looks for things to do.
2. Sometimes will look for things to do.
3. Rarely looks for something to do.
4. Constantly has to be pushed into doing something.

C. Reaction to Pressure

1. Works best under very little pressure.
2. Works best under occasional pressure.
3. Works best under constant but moderate pressure.
4. Works best under strong continual pressure.

D. Punctuality (Morning breaks, returning from lunch, etc)

1. Excellent
2. Good
3. Fair
4. Poor

E. Work Interest

1. Becomes engrossed in the work.
2. Work holds his attention.
3. Shows little concern for his work.
4. Displays complete unconcern over his work.

INTERPERSONAL RELATIONS

A. Reaction to Supervisor

1. Works best with little or no supervision.
2. Works best with permissive, supportive supervision.
3. Works best under firm, authoritarian supervision.
4. Resists supervision.

B. Cooperativeness with Supervisor

1. Is usually helpful and meets demand of shop.
2. Sometimes is diffcult to work with.
3. Frequently difficult to work with.
4. Does not help at all and often refuses to comply with shop rules.

C. Relationship with Peers

1. Achieves quick and easy acceptance within group.
2. Achieves harmonious relations with most of group after a short time.
3. Can achieve acceptance by only a few members of the group.
4. Is not accepted in group.

COMMENTS:

VCS #2

PHYSICAL CAPACITY RATING FORM

Name: ____________________ Date: ____________________

Rater: ____________________ Total Score: ____________

This is primarily a rating of capacity for physical effort and the presence of the neuro-muscular system necessary for various activities. Rater should have the benefit of at least two weeks observation of the subject being rated and full access to the subject's medical examination report and other pertinent data available.

Rater should indicate his placement of the subject in terms of one of the four descriptive categories given below for each factor:

LIFTING, CARRYING, PUSHING, AND PULLING

These are primary "strength" physical requirements, and generally speaking, a person who engages in one of these activities can and does engage in all. Specifically, each of these activities can be described as:

(A) Lifting: Raising or lowering an object from one level to another; includes upward pulling.

(B) Carrying: Transporting an object, usually holding it in the hands or arms, or on the shoulder.

(C) Pushing: Exerting force upon an object so that the object moves away from the force. This includes slapping, striking, kicking, treadle actions.

(D) Pulling: Exerting force upon an object so that the object moves toward the force; includes jerking.

Subject rated as follows: (Circle one)

Severe Limitation	Marked Limitation	Mild Limitation	No Limitation
1	2	3	4

CLIMBING AND BALANCING

These activities are defined as:

(A) Climbing: Ascending or descending ladders, stairs, scaffolding, ramps, poles, ropes and the like, using the feet and legs or using hands and arms as well.

(B) Balancing: Maintaining body equilibrium to prevent falling when walking, standing, crouching, or running on narrow, slipping, or erratically moving surfaces; or maintaining body equilibrium when performing gymnastic feats.

Subject rated as follows: (Circle one)

Severe Limitation	Marked Limitation	Mild Limitation	No Limitation
1	2	3	4

STOOPING, KNEELING, CROUCHING, AND CRAWLING

These activities are defined as:

(A) Stooping: Bending the body downward and forward by bending the spine at the waist.

(B) Kneeling: Bending the legs at the knees to come to rest on the knee or knees.

(C) Crouching: Bending the body downward and forward by bending the legs and spine.

(D) Crawling: Moving about on the hands and knees or hands and feet.

The activities in this factor involve full use of the lower extremities as well as the back muscles.

Subject rated as follows: (Circle one)

Severe Limitation	Marked Limitation	Mild Limitation	No Limitation
1	2	3	4

REACHING, HANDLING, FINGERING, AND FEELING

These activities involve the use of one or both of the upper extremities and are defined as:

(A) Reaching: Extending the hands and arms in any direction.

(B) Handling: Seizing, holding, grasping, turning, or otherwise working with the hand or hands; not fingering.

(C) Fingering: Picking, pinching, or otherwise working with the fingers primarily (rather than with the whole hand or arm as in handling.)

(D) Feeling: Preceiving such attributes of objects as size, shape, temperature or texture, by means of receptors in the skin, particularly those of the finger tips.

Subject rated as follows: (Circle one)

Severe Limitation	Marked Limitation	Mild Limitation	No Limitation
1	2	3	4

COMMENTS:

VCS #4
GENERAL HEALTH RATING FORM

Name:______________________________ Date:__________________

Rater:______________________________ Total Score:____________

This rating is in terms of the effect the retardate's health can be presumed to have on training and vocational potential, and is based on a routine physical examination administered prior to or during the evaluation period.

Rater should have the benefit of at least two weeks observation of the subject being rated and full access to the subject's medical examination report and other pertinent data available.

Rater should indicate his placement of the subject in terms of one of the four descriptive categories given below by circling the appropriate category:

Severe defect; few training or job opportunities.	Marked health problem; will influence training and/or job potential.	Mild health problem; will not interfere with training and/or job potential.	Good Health; no apparent defect.
1	2	3	4

COMMENTS:

VCS #6
WIDE RANGE ACHIEVEMENT TEST
(Arithmetic Only)

PROCEDURE

A. Put subjects at ease.

B. Explain that this is an Arithmetic test. Show that the first row contains only additions, second row only subtractions, third row, multiplication, and so forth; with fractions arranged same way. (If necessary, explain that on page 3, directions are shown above each problem or set of problems.)

C. Let subjects work by themselves until limits of achievement are reached, but not longer than 15 minutes.

D. If paper is handed in before time limit, carefully check for omission of problems within subject's range of achievement. Return if such omissions are found, and urge subject to try and solve omitted problems even if he thinks he cannot do them.

E. If subject is unable to solve any of the computation problems because his achievement level is below the 2nd grade, or only one or two problems of test are solved correctly, he is given an oral test to determine the development of his number concepts at the preschool level. The 15 items of this oral supplement are printed at the bottom of the first page underneath the grade norms for the spelling test. The instructions for the oral test are as follows:

1. Point to the row of dots at the bottom of the first page of the record form and ask subject to point with the finger and to count them aloud. Encircle items 1, 4, 5, and 9 depending on the number of dots counted correctly.

2. Point to the numbers 3, 5, 6, and 7 on the left hand margin and ask subject to read them. Encircle as many of items 2, 6, 10, and 13 as were responded to correctly.

3. Say: "Show me three fingers." Encircle item 3, if response is correct.

4. Ask: "Which number is more, 9 or 6? Encircle item 7, it answer is correct.

5. Ask: "If you have 3 cents and spend 1 cent, how many have you left?" Encircle item 8, if answer is correct.

6. Ask: "Which number is more, 41 or 28?" Encircle item 11, if answer is correct.

7. Say: "Show me eight fingers." Encircle item 12, if response is correct.

8. Ask: "How many are 4 apples and 3 apples?" Encircle item 14 if answer is correct.

9. Ask: "Jack had 9 marbles. He lost 3 of them. How many were left?" Encircle item 15, if answer is correct.

VCS #7
DISC ASSEMBLY TEST

PROCEDURE

A. Seat subjects, not facing or near each other and put them at ease.

B. Arrange materials in front of subjects: 100 discs, box each of, 500 bolts, 500 nuts, 500 washers for each.

C. Say: "This is a test. I want to see how many of these discs you can assemble. Let's do one for practice." Examiner takes disc in hand, places washer on bolt, inserts through one disc hole and attaches with nut, screwing bolt down completely.

Then say: "See how it is done? Now let me see you finish the disc by putting bolts in all the rest of the holes the same way I put in the first one. Be sure to screw the nut all the way down. Go ahead." Examiner hands the disc to the subject.

If subject succeeds, trial period is complete. If he does not succeed, examiner assists in placing a few bolts, then begins instructions anew with "See how it is done." If the subject fails to grasp task on second trial, test is discountinued.

If subject succeeds, examiner repeats, "Alright now, let me see how many you can make until I tell you to stop. Go ahead."

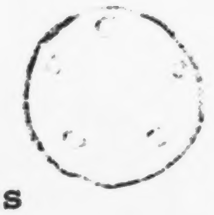
Examiner starts watch.

GIVE NO FURTHER ENCOURAGEMENT other than to answer direct questions put by the subjects. Answer by paraphrasing the original instructions. AT NO TIME SHOULD AN INDICATION OF THE LENGTH OF TIME OF THE TEST BE GIVEN. MAKE NO ATTEMPT TO MOTIVATE THE SUBJECT BEYOND the original instructions.

At the end of one hour say, "All right, Stop." He may then praise or otherwise talk to the subject without limitation.

D. MATERIAL SPECIFICATIONS:

Disc: 6" masonite circle with five 1/4" holes bored according to the pattern indicated in the drawing.



Bolts, nuts, and washers; 1/2" by 1/4" bolts with nuts, 3/4" washers with 5/16" hole.

E. TESTING CONDITIONS:

In order to control for fatigue factors, subjects should be tested in the morning prior to the lucnh time break. Subjects should be tested individually, although the examiner may attend more than one subject at a time. Subjects should sit at a table or bench and should not face each other or be within easy communication distance. No distracting external influence should be present and no interruptions should be permitted.

VCS #8
WELLS CONCRETE DIRECTIONS TEST

PROCEDURE

A. Put subject at ease.

B. Identify and explain function of each tool, (or determine if subject knows). Proceed only if he does after reasonable instruction. Otherwise make notation of difficulty for more detailed training and rescheduling.

Note: Tools may be taken from box, identified, and placed in work area; or they may be previously placed in the following order, from examiners left to right.

1. Paintbrush
2. Screw driver
3. Pliers
4. Battery
5. Hammer
6. Ruler
7. Hinge
8. Lock
9. Hook
10. Wire
11. Key
12. Wrench

C. Say: "This is a test of following directions. I am going to ask you to do certain things with these tools. I can only tell you what to do once so you must listen carefully. Now there are four directions you must remember--the right side, the left side, the near end, and the far end."

D. Demonstrate, or determine if subject knows, the four positions. Proceed only if he does after reasonable instruction. Otherwise make notation of difficulty for more detailed training and rescheduling.

E. Say: "You may study the tools as I tell you what to do with them but do not move your hands or touch any of them until I finish the directions."

F. Proceed to give the directions: Score

1. Place the lock to the right of the paint brush. (3)
2. Place the hinge to the far end of the ruler. (3)
3. Place the pliers to the left of the hammer. (3)
4. Place the wire to the near end of the screw driver. (3)

Score

5. Place the lock to the left of the ruler and the hook to the right of the screw driver. (6)
6. Place the battery to the right of the hammer and the hinge to the far end of the paint brush. (6)
7. Place the key to the left of the screw driver and the lock to the near end of the ruler. (6)
8. Place the hook to the near end of the paint brush and the battery to the far end of the hammer. (6)
9. Place the tool used to turn a nut to the left of the tool used to paint. (5)
10. Place the tool used to open the lock to the left of the tool used for measuring. (5)

Say: "Now close your eyes while I rearrange the tools."

Arrange the tools in original order and proceed:

11. If the paint brush is to the right of the ruler, then put the wrench at the far end of the screw driver. If it is not, then place the wire to the right of the hammer. (7)
12. If the hammer is to the left of the screw driver, then put the lock to the right of the paint brush and the pliers at the near end of the screw driver. If not, then place the key to the near end of the hammer. (10)